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REFLECTIONS OF AN ARMY OFFICER ON MEDICAL STUDENTS AND THE WAR

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My reflections as an officer in the Medical Department of the United States Army are neither carefully arranged nor very clearly expressed. They are based on no grand historical view of the times in which we live nor do they stem from any ordered, philosophical concept of our destiny as human beings on this globe. Moreover, they are directed not to those of my generation but to the medical students and house officers who are in attendance on this occasion. I am especially anxious to make the latter point clear, since I feel that I may be a little closer to the students than to their elders, for it has been my good fortune to have spent a large part of the past eighteen years with medical students. I think I know medical students and I doubt not that a good many of them know me—perhaps better than I know myself. However this may be, I can at least speak frankly and directly with them, and I think they can with me.

Although the timing of an educational experience in medicine is difficult to designate, for our purposes we will agree that the individual concerned is a student during that period of his career which is given over to preparation for his ultimate position in society as a practitioner, teacher or researcher in medicine. This begins at the first year of college and ends with the completion of postgraduate training. Before the completion of his internship the student frequently determines his ultimate goal and can, in his mind's eye, visualize himself in the future as far as professional activities are concerned. Moreover, he has some concept of the environment in which he plans to carry on his professional work. Indeed, the majority of medical students have some sort of ordered concept of this future long before they receive their degrees. It is likely that few professions are so conducive to thoughtful, long-time planning as medicine. To become a medical student nowadays the premedical curriculum must have been pointed carefully to acceptance by the medical school. Competition begins the day of college matriculation and steadily increases as the months go by. Then comes the inevitable day when the first screening process is instituted—probably most of you remember it. You were successful in passing through several progressively selective preprofessional school screenings, and you found yourselves at long last in the medical school of your selection and, equally important, in a school which selected you. This was the earliest of many similar screening experiences. In the medical school, competition increased. Academic morbidity was great during the first school year and mortality may have occurred within a few months; it almost always occurs for a few by the end of the first or second year. By graduation time, competition becomes a fixed habit with you. The award of internships is based on medical school performance; assistant residencies on internship performance; residencies on assistant residency performance. Thus quality of current work determines future hospital and medical faculty appointments. Specialization is decided on for those aspiring to the higher echelons of practice, and jockeying for position begins for the long steeplechase ending in certification as a fully qualified specialist. Specialization implies practice and practice implies patients, and patients are usually won—not inherited. Thus, becoming established in practice has its competitive implications too, although we try hard to protect our profession and our patients from the abuses, indignities and commercialism commonly associated with the term, to the end that this competition may be one for quality and opportunity for service rather than for material gain.

I have emphasized the competitive aspects of the activities of the undergraduate and graduate student and practitioner because I feel that because of this competition and other factors which I shall not enumerate there are few disciplines so conducive to the creation of a "one man show." Individualism, independence, objectivity and resourcefulness are engendered by this discipline. The young medical man, early in his educational life, knows where he is going and is on his way. Competition successfully met strengthens his determination to attain his objective, and sacrifices to this end become almost reflex. The successful medical student is a marked man among individuals of his age group. He is, relatively speaking, a specialist already. He deliberately bypasses or excludes many aspects of life which would attract him were he otherwise engaged. His normal social, economic and oft-times biologic inclinations are deliberately adjusted to consistency with his objective. He practices effectively a kind of isolationism. Celibacy and poverty are his accustomed states, and except for rare, understandable, though often lurid lapses, he leaves to his less occupied fellows active participation in the life of the nonmedical world about him.

TWO WORLD WARS

The third and fourth year medical students and some of the younger doctors before me tonight were either nonexistent or were enjoying the security of embryonic or fetal existence or infancy when the first phase of the current war was terminated in the armistice of 1918. Military victory was attained then and, according to my way of thinking, forfeited later when our country insured the failure of the League of Nations

The Roger Sylvester Morris Memorial Lecture, read before the University of Cincinnati College of Medicine, Cincinnati, Jan. 8, 1943, in honor of the late Roger S. Morris, formerly professor of medicine and director of the Department of Internal Medicine.

by separating itself from its responsibilities and obligations. During the ensuing twenty-four years our country remained an isolated unit in a closely integrated world—a world, according to Vice President Wallace, which has become actually smaller, when measured by travel time, than was our little country at the time our constitution was adopted in 1787. (It is well to remember that this constitution was necessary for the protection of the several states which were no longer isolated enough to feel secure from one another or the rest of the world as individual units.) We worked for peace following World War I, but with no success. Shortly after the armistice of 1918 we repudiated our 1917-1918 slogan to "Make the World Safe for Democracy"—a slogan ridiculed and discarded as we became cynical, "realistic," "debunked." We became quite sophisticated and poked fun at those who still cherished this fine ideal for which men had given their lives. "Anyway," we said, "it should have been worded 'to make Europe safe for democracy,'" for who really questioned the safety of democracy in the United States—thousands of miles from Europe and its recurring wars? But in 1941 we rediscovered that the slogan was both realistic and practical, for we learned then that our isolation was no protection and that only by making the world safe for democracy could our American democracy be preserved. It has been demonstrated conclusively in the past decade that there is no safety for any democracy unless there is safety for all.

It appears that in international affairs a gangster or kidnaper makes his decisions as to his next "take" on the same basis that our underworld gangsters and kidnapers operate: Can he get away with it? The gangster is everybody's business because everybody is vulnerable to the gangster at one time or another. To tolerate him and his attack on others only because we think we are strong enough to overcome him should he elect to attack us is putting a very high stake on our judgment. Not only is this dangerous as far as our selfish interests are concerned, but it is also in complete disregard of the responsibility that is part of civilized, enlightened citizenship. The unopposed rape of Manchuria by the Japanese when you were 14 years old, of Abyssinia by the Italians when you were 18 and embarked on your professional career, of Spain by Hitler and Mussolini when you were 19, of China by Japan when you were 20, all gave emphasis to the indifferent, selfish attitude of our democracies. The free people of the world saw fit to allow these things to happen—things which were contrary to their interpretation of right and wrong and in total violation of any concept of international justice and decency. But, at the time they occurred, these outrages did not seem to affect our immediate self interest directly. Indeed, the notion of avoiding violence in our attitude toward them was so strong as to make conspiracy and compromise acceptable to the end that we might have "no war in our time." You were well on in your highly specialized, competitive and absorbing medical education then—and most of you gave little more than enough thought to these developments to decide, along with the majority of your elders, that you wanted to keep your skirts clear of them. You asked only that you be allowed to follow the well defined course of medical progression ahead of you. This had been, was and, you believed, always would be your objective. Others, older and less occupied than you, were of the same detached, indifferent state of mind regarding the conflict, according to the Gallup polls. The European war was Europe's concern chiefly, and less than 10 per cent of us felt that we should declare war on Germany, although, if there is any comfort in recalling it now, a much larger group was willing to help England even at risk of war. It was not until after the Germans and Italians had overwhelmed Greece in April 1941 that as many as 30 per cent of us felt we should fight the aggressors, although even then another 30 per cent of us were opposed to incurring the risk of war by helping England. In October 1941 only 25 per cent of us felt that we should enter the conflict. Is it surprising that medical students and young doctors shared this feeling of indifference and apathy? Theirs was an extremely full life—a life which in peacetimes precluded distractions of any sort and demanded relentless concentration on the single objective of a medical education. Lend-lease and armed neutrality and selective service became topics of serious discussion but were not necessarily definitive distractions, and your major reaction to the ominous developments in the outside world was to hold hard to your course and your goal. Many of you in early 1941 belonged to the 50 to 65 per cent who believed, regardless of the right or wrong of it, that this country would get into the war eventually. Many of you resented this, correctly believing that it was a problem not of your making. It may have held, doubtless did hold a strange, detached fascination for you, but you could put it out of mind whenever the papers and radio would allow and, with the aid of draft board deferment of medical students, you kept at your absorbing task.

OUR ENTRY INTO THE WAR

Then came Dec. 7, 1941 and the attack by Japan at Pearl Harbor. Three days later Germany and Italy declared war on us. Whether we liked it or not, and regardless of our previous opinions about the war, it now became our war. Our enemies dispelled confusion and doubt and clarified our position. Germany, Italy and Japan announced that their objectives were to destroy our freedom, enslave us and possess our material assets. The United States was in the war on the side it had favored from the beginning, no longer giving only lip service to idealism and against the dictum that "Might is Right" but also fighting to survive as a free nation in the world. This was a little more than one year ago, and it really came as a shock and dislocation to you, for you had no choice except to relate yourselves to it. Here was something which had actually happened, and it was bigger than your career or anything else. What was your reaction? You know far better than I, but I hazard a guess that it was not altogether that of men impatient and eager for the fray. "The Japs have to be whipped, and the Germans and Italians too—but why should this happen to us?" Certainly you had a right to ask that question. Some of you were not even born when the real answer to your query was laid down. You have had little, if anything, to do with the setting up of this war. My generation is responsible, not yours. Yet on your shoulders must fall the responsibility of correcting the oldsters' mistakes, and life is always like this. My generation and the generation before me had a chance to make the world safe for democracy and we failed. Your generation and mine again will have that chance after this war is won, and it is comforting to believe, as I do, that we shall not fail unless you look to my generation (which, remember, failed once) rather than to your own for leadership. But the war isn't won yet, and if we are to survive at all it must be won. Then will

come the problem of an enduring peace. So let us concern ourselves with the present now and ask of medical students and recent medical graduates: Where do you find yourselves now, today, with relation to the war and your careers?

It appears now that you will very soon find yourselves on active duty in the Army or Navy of the United States—no longer a free agent to follow the line of your ambition and, regardless of all else, to meet competition and bend circumstance to the attainment of the objective which for many of you is as old as your mature life. You are called on at long last, and in no uncertain terms, to compromise with personal ambition and objective. An interference, stronger than any you have ever encountered, has developed in your struggle toward your goal, and this interference is your loyalty as an American citizen. What is your chief objective now? It is the common objective of all loyal Americans: to bend every effort and utilize every talent to help win the war and thus preserve our country, and then to insure an enduring peace. Is this objective incompatible with your former, prewar objective which was, in general, to become a doctor of medicine? In the broader sense it is not, for you are more useful to your country now as doctors and potential doctors than you could be as combat soldiers. In this you are more fortunate than your brethren in most of the other walks of life. The war will not prevent the completion of your formal medical education. What about training for a specialty in medicine? This is an important question to those of you who have decided to restrict your work to one field. As far as specialization is concerned, it is obvious that it will be possible for but few, if any, of you to have two, three or four years of postgraduate training before your assignment to duty with the armed forces. Indeed, it is even conceivable that the need for young medical officers in the armed forces might become so great as to preclude the one year of internship now prescribed.

How will the Army use you when you become commissioned in the Medical Corps? I will, first, answer this question the way I believe most of you would answer it: "If I am very, very lucky I will be assigned to a general hospital and to the specialty in which I am interested; or if I am lucky I will be assigned to a station hospital or an evacuation or field hospital where professional work has at least some resemblance to that with which I am familiar in civilian life. If I am unlucky I will be assigned to troops where little of my knowledge will be utilized and where I shall acquire no useful professional training."

Regarding the relative importance of assignments in the Medical Department I have a definite opinion. During the past year I have had an opportunity to observe the professional work of our army general and station hospitals in this country. The quality of professional care which is provided is in the main good. The experience and training afforded by the professional services of such hospitals for the junior members of the staff varies in relation to the senior officers, of course. In hospitals in which the professional services are headed by men interested in the training of young men, general medicine and surgery and the medical and surgical specialties are practiced along conventional lines. The ward officer does the work of the civil hospital intern and assistant resident under the supervision of his section chief. The section chief is responsible to the chief of service, medical or surgical as the case may be, and the chiefs of service are responsible to the commanding officer. Ward rounds are held daily in each section, and "grand rounds" bring together all the sections once a week or more. Interservice consultations, staff meetings, clinical-pathologic conferences and journal clubs complete the program of professional activity with one exception. The recommendations of the ward officer and section chief regarding the final disposition of patients are always reviewed formally by boards composed of representatives of the services and the commanding officer. So much for the professional work of the hospitals. It isn't materially different from practice in our better civilian institutions.

THE FIELD MEDICAL OFFICER

Let us examine the future activities of the "unlucky" majority of you who will be ordered to field duty. The clinical material reaching army hospitals comes to it almost exclusively through the activities of the medical officers who are assigned to troops. Thus the initiation of medical care begins with this medical officer. It is he who decides whether treatment can be provided locally or whether hospitalization is required. His acumen determines whether or not diphtheria, meningitis, pneumonia and measles are promptly recognized, isolated and evacuated for hospital care. Thus triage, or the selection and classification of significant illness and injury, and evacuation are extremely important functions. They are initiated and can be initiated only by the medical officer with troops. It is obvious that the proper functioning of the enormous medical organization which is behind the fighting force is dependent on the skilful, prompt execution of triage and evacuation. In the theaters of operations these functions are conspicuously important, and here, as in the training area, the wounded man is dependent on his medical officer also for first aid and emergency treatment. How to prevent death from asphyxia in this sucking chest wound; what to do and how to do it under the existing circumstances for shock; how to handle burns in order to preserve life and the function of the burned part; what to do about simple and compound fractures in order to save life and limb; how to practice hemostasis; how to recognize malingerers and the hysterical and how to handle them; which cases to evacuate when facilities are limited and which to retain; which patients to treat when almost overwhelmed by the volume of work, and which to abandon as hopeless; what to do about head wounds and abdominal wounds; how and when to prescribe the sulfonamides for battle casualties and, equally important, how to see that they are available and actually administered; when and how to use tourniquets and when and how not to; how to collect the wounded, transport them to aid stations and further on to definitive treatment; how to control in the most effective way omnipresent pain; how to sustain courage in self and fellows when it is ebbing? The mere asking of these questions indicates a convincingly negative answer to the next: Is there any place in this army where medical knowledge and skill, resourcefulness and courage are more important than in an active first aid station in a battle area?

The health of the fighting men (and these are the only men who will gain us the victory) is in the hands of the field medical officer. He is the family doctor during the training period and he accompanies his clientele into combat. His knowledge of camp sanitation safeguards their health. Preventive medicine in its most exciting, productive aspects is his interest and

duty. He is a practical specialist in hygiene and sanitation. He is, in one man, sanitarian, diagnostician, expert in traumatic surgery with all its complications; expert in triage; expert in evacuation; morale officer. And, in order to accomplish his mission, he also must know something about map reading, logistics and military tactics.

I have been describing a doctor who is foreign to civil concepts of medical practice—a specialist who is recognized only by the military. Just now the exigencies of life are such that, for the winning of this war, he is the most important doctor extant. And the winning of the war is for the time being all that counts. Each one of us here would be carrying a gun were it not for the fact that we can actually help win the war more effectively by being a doctor or training to be one. Although ours is a noncombatant service, I am sure we take no pride in that classification of our function when there is so much at stake and when combat alone will settle the issue. If we weren't contributing more toward the victory by being in this noncombatant medical department than we could by taking up guns, then we would get to the guns, for otherwise, when men are fighting to preserve our lives and institutions, our position would be intolerable.

The doctors of our country during past wars created a great tradition. I predict that this tradition will be not only sustained but also enriched by the present generation of medical men. During this war you will be guided in your roles by the example provided you by the distinguished physician whose memory we honor this evening. In this assurance I shall conclude these remarks by reading to you a few paragraphs by another distinguished physician. They were written at the outbreak of the war between the states, sixteen years before Dr. Morris was born. In 1861 Dr. Oliver Wendell Holmes, in his fifty-second year and Parkman professor of anatomy and physiology at Harvard University, terminated an introductory lecture to medical students as follows:

"It is time to bring these crowded remarks to a close. The day has been when at the beginning of a course of lectures I should have thought it fitting to exhort you to diligence and entire devotion to your tasks as students. It is not so now. The young man who has not heard the clarion voices of honor and of duty now sounding throughout the land will heed no word of mine. In the camp or the city, in the field or the hospital, under sheltering roof or half protecting canvas or open sky, shedding our own blood or stanching that of our wounded defenders, students or teachers—whatever our calling and our ability—we belong not to ourselves, but to our imperiled country, whose danger is our calamity, whose ruin would be our enslavement, whose rescue shall be our earthly salvation!

"You cannot all follow the armies of your country to the field, but remember that he who labors for the general good at home is an ununiformed soldier in the same holy cause with those who bear arms or minister at the side of the ambulance and in the camp hospital."

With these stirring words and, with a salute from my Chief, Surgeon General James C. Magee, to the ununiformed soldiers who constitute the faculties and students of the medical schools, to the staffs of civilian hospitals, to the essential practitioners in rural and urban communities, to civilian doctors all who are carrying their share of the heavy load imposed by our country's total war effort, I conclude the Roger Sylvester Morris Memorial Lecture for 1942-1943.

ANORECTAL LYMPHOGRANULOMA VENEREUM

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I have studied lymphogranuloma venereum at the New York Hospital since 1932, largely in a clinic specially devoted to the disease. During that period Frei tests were performed on all inpatients and outpatients who presented symptoms or signs which were at the time regarded as lymphogranulomatous. The attendance of patients at the Lymphogranuloma Clinic was regular and extended, in most instances, over a period of years. The progress of clinical manifestations was closely followed by repeated proctoscopic and gynecologic examinations. From 1932 through 1937, treatment consisted chiefly of injections of antimony and potassium tartrate, fuadin, neostam and Frei antigen (by the intradermal and subcutaneous routes). As these remedies were virtually ineffective, the progress of the disease in the persons so treated must have differed little from that in untreated persons. Since 1938 therapy has been carried out mainly with the sulfonamide compounds, principally sulfathiazole and sulfanilamide.

Early in this study [1] it was recognized that of all the clinical manifestations of lymphogranuloma venereum those which involve the anorectal region are the most important; accordingly, all information was carefully gathered which might throw light on the genesis and progress of the disease in this area of the body. The prime significance of the anorectal lesions rests on the following facts:

They may be, and frequently are, of great chronicity; they are infectious during the period of their activity; they are not completely controlled by any form of therapy; they may not become apparent until great structural change has occurred in the bowel wall; they may lead to complete closure of the bowel, to considerable local deformity and, in rare instances, to death.

Among the unanswered questions of anorectal lymphogranuloma are the frequency of occurrence of the symptomatic and asymptomatic disease in the community, the relative distribution of the entities which comprise the condition, the progress of certain of the commoner entities after their inception, the relation of the anorectal disease to inguinal lymphadenopathy and, vice versa, the mode of acquisition and the status of present therapeutic methods. This paper is an attempt to answer these questions.

THE ESTIMATED FREQUENCY OF OCCURRENCE OF LYMPHOGRANULOMA VENEREUM IN NEW YORK CITY

There has been an increase in the number of cases of symptomatic lymphogranuloma discovered annually at the New York Hospital during the past nine years. The sharp rise which occurred in 1934 and again in

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1. Grace, A. W., in discussion on D'Aunoy, R. D.; von Haam, Emmerich, and Lichtenstein, L.: Virus of Lymphogranuloma Inguinale, Am. J. Path. **11**: 827 (Sept.) 1935.

1940 accompanied the introduction of mouse brain [2] and yolk sac [3] antigens respectively. The unlimited supply of the former material enabled many more tests to be performed than were possible with the small stocks of human antigen then available, and the greater sensitivity of the yolk sac material (also available in unlimited quantity) led to the discovery of reactors more weakly positive than could be detected by the use of mouse brain antigen. The smaller rise in 1941 followed the introduction, in that year, of routine Frei tests in all cases of chronic cystitis. It is not possible, therefore, to state whether or not an actual increase in frequency of the symptomatic disease has occurred in New York City since 1933.

The data of the accompanying table show that symptomatic lymphogranuloma venereum is now found in approximately 1 of every 1,000 persons admitted to the New York Hospital. It is likely that a higher incidence of the disease would have been observed had all, instead of only 10 per cent, of 600 cases of fistula in ano and perirectal abscess been Frei tested. The clientele of the hospital can be regarded as a cross section of the city's population, although the institution is situated in a predominantly white district. Proportionately, therefore, about 7,000 cases of symptomatic lymphogranuloma must occur annually among the 7,000,000 inhabitants of New York City. Asymptomatic lymphogranuloma venereum occurs much more frequently than the symptomatic form and is most commonly observed among those who have other venereal diseases.[4] Thus 42.1 per cent of the syphilitic patients at the New York Hospital were found to have asymptomatic lymphogranuloma. Disregarding a comparatively small number of cases of gonorrhea, in which the incidence of asymptomatic lymphogranuloma is probably comparable to that in syphilis, there were, at the New York Hospital between 1936 and 1941, approximately 9 cases of asymptomatic to 1 of symptomatic lymphogranuloma venereum.

THE RELATIVE DISTRIBUTION OF THE CLINICAL MANIFESTATIONS OF LYMPHOGRANULOMA VENEREUM

Two hundred and seventy-six patients showed 348 clinical manifestations of lymphogranuloma venereum. The regions most frequently affected with the disease are, in descending order of frequency, the anorectal space, the inguinal region, the genital region and the lower urinary tract; more than half of the cases present anorectal manifestations, the commonest of which are proctitis, with or without stricture, fistula in ano and perirectal abscess. The proportion of white patients and of the male sex who suffer from anorectal lymphogranuloma is higher than has been generally believed. Finer analysis of the material reveals that 48.7 per cent of such lesions occurred in white males, 13.5 per cent in white females and 29.5 per cent in Negro females. Only one third of the males were known to be homosexuals, all of whom adopted the passive role.

2. Grace, A. W., and Suskind, Florence H.: The Use of Standardized Mouse Brain Antigen for the Performance of the Frei Test for Lymphogranuloma Inguinale, J. A. M. A. **107:** 1359 (Oct. 25) 1936.

3. Grace, A. W.; Rake, Geoffrey, and Shaffer, M. F.: A New Material (Lygranum) for Performance of the Frei Test for Lymphogranuloma Venereum, Proc. Soc. Exper. Biol. & Med. **45:** 259 (Oct.) 1940.

4. Shaffer, M. F.; Rake, Geoffrey; Grace, A. W.; McKee, Clara M., and Jones, Helen P.: Lymphogranuloma Venereum Intercurrent with Other Venereal Diseases, Am. J. Syph., Gonor. & Ven. Dis. **25:** 699 (Nov.) 1941.

CONSIDERATION OF CERTAIN OF THE COMMONER ENTITIES OF ANORECTAL LYMPHOGRANULOMA VENEREUM

Studies of the development of proctitis in male homosexuals indicate that an average period of six weeks elapses between infection of the anorectal mucosa and the appearance of symptoms. The commonest early sign of lymphogranulomatous involvement of the anorectal mucosa is the passage of blood by the anus. This is a direct consequence of the replacement of a portion of the mucosa by granulation tissue resulting from the local action of the virus. Bacterial infection of the raw surface, together with the pyogenic property of the virus, soon causes the anal discharge to be purulent. Contraction of the fibrous elements of the granulation tissue produces a narrowing of the lumen of the bowel which may be partial (stricture) or complete (stenosis). Infections of the lower portion of the bowel may be discovered before or after narrowing of the lumen has occurred. In the former instance, the condition is known as proctitis without stricture and, in the latter, as proctitis with stricture. The invasive properties of the virus, deposited either perianally or within the bowel lumen, lead also to the formation of fistula in ano and perirectal abscess, which may precede, succeed or be unassociated with the development of proctitis with or without stricture.

Annual Number of New Cases of Symptomatic Lymphogranuloma Venereum per Ten Thousand Inpatients and Outpatients, New York Hospital, 1933-1941

Year	Number of New Cases of Symptomatic Lymphogranuloma Venereum	Total Number of New Admissions	Cases of Symptomatic Lymphogranuloma Venereum per 10,000 Admissions
1933	10	40,874	2.4
1934	26	43,419	6.0
1935	27	44,123	6.1
1936	32	45,977	7.0
1937	33	44,484	7.4
1938	35	43,411	8.1
1939	30	41,895	7.1
1940	39	41,889	9.3
1941	44	42,041	10.5

Proctitis Without Stricture.—Seven eighths of the patients with proctitis without stricture had no antecedent history of anorectal disease. The remainder had had perirectal abscess or fistula in ano at an average interval of 1.7 years. The proportion of patients with proctitis without stricture which subsequently become strictured is not exactly known but is probably in the neighborhood of one third; 15 of our series of 44 had stricture at an average interval of 10.9 months after the appearance of the proctitis. It would seem also that unless stricture develops within three years after the onset of anorectal inflammation a condition of chronic proctitis without stricture will result. Twelve such cases were observed, in which the average duration of the proctitis was eight years with limits of three and eighteen years respectively. In only 1 case was lymphogranulomatous proctitis observed to heal spontaneously.

Proctitis without stricture is predominantly found in men, who constituted 81.8 per cent of the series. Such male preponderance is due, I believe, to the fact that approximately three fourths of the men were homosexuals who adopted the passive role and whose anorectal mucosa, therefore, received a concentration of the

virus sufficiently heavy to produce the characteristic changes simultaneously over relatively large areas of the bowel. In the female, virus, usually deposited in the vagina and on the external genitalia, reaches the anorectal mucosa through contiguous moist surfaces more slowly, and probably in lower concentrations, than in the male homosexual. The acute phase of the infection, accordingly, is less apt to occur in women, and considerable structural changes are often found to have taken place in the female anorectal mucosa and bowel wall by the time the condition reveals itself through the appearance of a bloody, purulent, anal discharge. Proctitis without stricture is largely a manifestation of lymphogranuloma venereum. Forty-four patients, or 84.6 per cent, gave a positive and 8 patients a negative Frei reaction. It is interesting to note that, in 7 of the cases presenting negative reactions, the proctitis healed spontaneously within an average period of twenty-two months, with limits of three and fifty-two months respectively.

Proctitis With Stricture.—This condition differs from proctitis without stricture chiefly in the possession, in the bowel wall, of a firm band of fibrous tissue which encircles and narrows the lumen. The degree of closure of the bowel varies from being just perceptible to being complete. The fibrous band, or stricture, is usually single, may extend over several inches of the wall and occurs most frequently within reach of the examining finger. The condition is not acute but is of considerable chronicity and is accompanied by a bloody, purulent, anal discharge. In the absence of anal fissure there is little pain. The smallest diameter of the lumen of the bowel compatible with evacuation, aided by cathartics, was approximately 8 mm. The number of cases of proctitis with stricture in which colostomy was required for relief of symptoms of obstruction was relatively small, 17, or 18.9 per cent, of our series having had to submit to this operation; three fourths of the group were females and the remaining 4 persons were white male homosexuals. The average period that elapsed between the onset of anorectal disease and the performance of colostomy was 7.2 years, with limits of one and twenty-two years respectively.

In one half of the cases of proctitis with stricture there was no history of either previous anorectal disease or sequelae in the anorectal area. Approximately one third began, in descending order of frequency, as proctitis without stricture, fistula in ano, perirectal abscess and perianal abscess. There is evidence to show that proctitis with stricture requires a considerably longer period for its development when preceded by the three last named entities than when it is a sequel of proctitis without stricture. The remaining one sixth of the cases of proctitis with stricture developed, while the proctitis was still active, other anorectal manifestations, of which the commonest were fistula in ano, rectovaginal fistula and perirectal abscess. The distribution by sexes of 90 cases of proctitis with stricture was as follows: males 36.7 per cent, females 63.3 per cent. The preponderance of females is partly due, I believe, to the fact, already mentioned, that males tend more than females to develop chronic proctitis without stricture. Proctitis with stricture is almost exclusively a manifestation of lymphogranuloma venereum: 96.8 per cent of 93 patients yielded a positive Frei reaction.

Stricture Without Proctitis.—This term is applied to those cases in which the anorectal mucosa is smooth and without ulceration and the bowel lumen is narrowed by the presence of a stricture in the form of a diaphragm with a small central aperture. The condition appears inactive and there is no history of an antecedent anal discharge. It is possible that these cases represent the end stage of an inflammatory process which has commenced outside the bowel wall and traveled inward as far as but without involving the mucosa. Stricture without proctitis occurs most commonly in women, who furnished 64.3 per cent of our series of 14 cases; slightly more than one half of the patients gave a positive Frei reaction.

Fistula In Ano.—In this condition there is a tract which passes through the perirectal or perianal tissues and connects the bowel lumen with the cutaneous surface, usually in the neighborhood of the anus. The patient is made aware of the fistulous tract by the appearance of a perianal discharge. During the period of this study 340 persons with fistula in ano were observed at the New York Hospital; 54 had concomitant perirectal abscess. Frei tests were performed in only 37 cases, of which 19 were positive. It is probable that many cases of lymphogranuloma venereum were overlooked in the untested material.

Perirectal Abscess.—Two hundred and fifty-nine persons were diagnosed as presenting perirectal abscess during the course of this study; 54 had concomitant fistula in ano. Frei tests were performed in not more than 26 cases, in 12 of which there was a positive reaction. It is likely that many cases of lymphogranuloma venereum were unrecognized in the untested material.

INGUINAL ADENOPATHY IN ASSOCIATION WITH ANORECTAL LYMPHOGRANULOMA VENEREUM

The development of anorectal lymphogranuloma may be unassociated with, preceded, accompanied or followed by the occurrence of inguinal adenopathy. It is my belief that such adenopathy is a direct consequence of the presence of the virus in the perineal, perianal and anal areas whose lymph channels drain directly into the inguinal nodes. The majority of patients do not show inguinal involvement at any time, 59.7 per cent of our series of 164 persons falling into this category. The adenopathy which developed in each of the remaining three groups was unilateral and suppurative in approximately 70 per cent of 66 persons. In no instance were the nodes or pus examined for the presence of the lymphogranuloma virus. Pus was studied bacteriologically, however, in 3 cases, 1 in which the adenopathy was concomitant with and 2 in which it followed the development of anorectal disease at an interval of six months and ten years respectively; no organisms were found.

Inguinal Adenopathy Preceding Anorectal Lymphogranuloma.—This, the commonest time relation, included 31 persons, or 18.9 per cent of the series. The group consisted of approximately equal numbers of males and females, both of whom showed an average interval of ten years between development of adenopathy and of anorectal manifestations. About one half of the cases were observed for a period of five years or less. Rectal examination was not made in any person during the existence of the adenopathy. When first observed two thirds of the patients had proctitis with stricture, and the remainder proctitis without stricture or fistula in ano.

Inguinal Adenopathy Concomitant with Anorectal Lymphogranuloma.—The group comprised 14 males and 7 females, or 12.9 per cent of the series. The

exact nature of the anorectal condition was known in 13 instances among which proctitis without stricture, fistula in ano and perirectal abscess were almost equally represented. There was only 1 case of proctitis with stricture.

Inguinal Adenopathy Following Anorectal Lymphogranuloma.—There were 8 men and 6 women in this category, which made up 8.5 per cent of the series. The average interval between the development of anorectal disease and inguinal adenopathy was 8.8 and 4.9 years for men and women respectively. Ten persons had proctitis with stricture and 3, all males, proctitis without stricture.

LYMPHOGRANULOMATOUS INGUINAL ADENOPATHY UNASSOCIATED WITH ANORECTAL LYMPHOGRANULOMA VENEREUM

Sixty-seven males and 10 females with inguinal adenopathy, or with scars from earlier suppurative lesions in the groin, gave positive Frei reactions. There was neither history nor evidence in the group of other clinical manifestations which could be regarded as lymphogranulomatous. Primary lesions were present on the external genitalia in 15 persons (1 female). In approximately three fourths of the cases the adenopathy was unilateral and suppurative. The average period of observation of the group since the development of adenopathy was 7.8 years, with one half of the cases being studied for five years or less. Proctoscopic and gynecologic examinations were made during the existence of the adenopathy and, subsequently, at intervals of approximately three months in order to determine the frequency with which lymphogranulomatous inguinal adenopathy, unassociated at its inception with perineal, perianal or anal lesions, was followed by anorectal lymphogranuloma. Considerable importance was attached to this point in view of the widespread but unproved belief that the anorectal disease is a sequel of lymphogranulomatous infection of the inguinal lobes. Not one case of anorectal lymphogranuloma developed in the group. It was therefore concluded that, in the absence of perineal, perianal or anal lesions, lymphogranulomatous inguinal adenopathy is seldom, if ever, followed by the anorectal disease.

THE MODE OF ACQUISITION OF ANORECTAL LYMPHOGRANULOMA VENEREUM

It is my belief that the lesions of anorectal lymphogranuloma arise by deposition of the virus either on the anorectal mucosa or in the perineal or perianal area—in males partly by the practice of pederasty and in females as a result of the contiguity of the vulva and the anus. Evidence in support of this statement is both direct and indirect. The former includes the work of Levaditi, Mollaret and Reinié,[5] who in 1935 produced the pathologic changes characteristic of lymphogranuloma venereum in the rectum of chimpanzees by direct inoculation of the virus into the mucosa. The infection of children by the use of an enema tip in common with a lymphogranulomatous person also falls into this category. Indirect evidence is provided by the studies of the Lymphogranuloma Clinic of the New York Hospital and is divided into two groups—"certain" and "very probable." The two groups contain 64.4 per cent of the males and 39 per cent of the females affected with anorectal lymphogranuloma. Included in the "certain" category are 42 males (36 homosexuals) and 7 females; in the "very probable," 14 males and 23 females. Primary infection of the mucosa is regarded as certain in all male homosexuals with the anorectal disease and also in those persons of either sex in whom inguinal adenopathy appeared concomitantly with the development of anorectal lymphogranuloma. The largest group in the "very probable" division was composed of 11 males and 14 females in whom inguinal adenopathy, unilateral and suppurative in approximately 70 per cent of the cases and unassociated in all with infections in the lower limb, had preceded the onset of the anorectal disease by an average period of ten years. Although none of these 25 persons were seen during the existence of the adenopathy, the site of their primary lesions has been placed in the anorectal area, in virtue of the fact that none of 77 other persons with lymphogranulomatous inguinal adenopathy, observed for practically the same period as the 25 and with primary lesions either on the external genitalia or not demonstrable at all, subsequently had anorectal disease. Included also in the "very probable" category are 3 males and 9 females in whom proctitis with or without stricture followed such conditions as fistula in ano, perirectal abscess, perianal abscess, perianal sinus, anal fissure and granulomatous perianal and vulval masses.

TREATMENT OF ANORECTAL LYMPHOGRANULOMA VENEREUM

It is now well established that the sulfonamide drugs will cause the regression of lymphogranulomatous inguinal adenitis, suppurative and nonsuppurative, within a period of approximately five weeks.[6] Sulfanilamide, the first of these drugs to be employed, produced many toxic reactions and has now been replaced by sulfathiazole. The latter drug is administered in a course which consists of 1.5 Gm. three times daily for two weeks, followed immediately by 1 Gm. three times daily for three weeks. The manifestation of the anorectal disease which is most responsive to sulfonamide therapy is proctitis, which, unlike lymphogranulomatous adenitis, seldom heals spontaneously. Cases of short duration without stricture can be completely healed. Long-standing cases, and all with stricture, require at least one year's therapy with rest periods of from two to three weeks after each course of treatment. The amount of anal discharge lessens shortly after treatment is begun and ultimately ceases.

Follow-up studies now in progress at the New York Hospital, however, indicate that the cessation of anal discharge and absence of proctoscopic signs of activity are not always certain evidence of cure of lymphogranulomatous proctitis. Anal discharge and inflammation of the anorectal mucosa have reappeared in a number of cases of apparent cure and have been controlled by resumption of sulfathiazole therapy.

I am now inclined to believe that lymphogranulomatous proctitis should be treated by alternation of a sulfonamide compound and inactivated virus, the latter to be administered intravenously and derived from the infected chick embryo. Such chick preparations have furnished a means of obtaining practically pure suspensions of the virus which are so potent that, in a dilution of 1 in 750, they will produce a Frei reaction equal in intensity to that given by the best human pus antigens, whose physical qualities render them unsuit-

5. Levaditi, C.; Mollaret, P., and Reinié, L.: Identité étiologique entre la maladie de Nicolas et Favre et certaines anorectites ou recto-côlites végétantes: Etude expérimentale, Bull. Acad. de méd., Paris **113**: 439 (April 9) 1935.

6. Grace, A. W., and Suskind, Florence H.: The Treatment of Venereal Lymphogranuloma with Sulfanilamide, Ven. Dis. Inform., 1941, supp. 13, p. 26.

able for use in a concentration higher than 1 in 5. If the previous failure of Frei antigen, that is inactivated virus, therapy to benefit more than a small proportion of patients with lymphogranuloma was due to the low concentration of virus in the human or mouse brain preparations employed, that difficulty no longer exists, and antigen therapy should be reattempted with concentrations of inactivated virus much higher than those hitherto employed.

Surgery has a place in the treatment of many of the manifestations of anorectal lymphogranuloma. It should, however, be preceded and followed by at least one course of sulfathiazole therapy. Fibrous stricture is uninfluenced by any form of treatment; in the absence of proctitis, the lumen of the strictured area may be enlarged by the use of dilators.

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TREATMENT OF HYPERTHYROIDISM WITH THIOUREA AND THIOURACIL

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Two series of chemical compounds have been found to possess the unique property of inhibiting the endocrine function of the thyroid gland. The administration of these agents to experimental animals is followed, after a short latent period, by a lowering of the basal oxygen consumption, a decrease in the rate of growth and development and a diminished food intake—changes which are consistent with a state of hypothyroidism. In certain animal species these changes are accompanied by a hyperplasia of the thyroid gland which is apparently compensatory in nature and mediated by the anterior lobe of the pituitary. It was the object of this investigation to determine whether the endocrine function of the human thyroid gland could be inhibited by these compounds and to obtain information concerning their dosage and toxicity in individuals with normal thyroid glands and in cases of hyperthyroidism.

It was first pointed out by the Mackenzies and McCollum [1] that sulfaguanidine would induce thyroid hyperplasia in rats, an effect not influenced by adding iodide to the diet but one which could be abolished by the administration of effective doses of thyroxin. Similar thyroid changes were observed in rats by Richter and Clisby [2] and by Kennedy [3] as the result of the administration of thiourea derivatives. Further studies on this phenomenon have demonstrated that the primary action of compounds of these two types is centered on the inhibition of thyroid hormone production.[4]

More than one hundred compounds have been tested [5] in order to select highly active substances of low toxicity for clinical use. Most of the derivatives of thiourea exhibited some activity but varied widely in toxicity, thiourea itself being the least toxic of all. 2-thiouracil was the most highly active compound tested and the minimal lethal dose of this substance in rats was more than 100 times the dose necessary to produce a detectable thyroid effect. 2-thiouracil, 2-thiobarbituric acid, diethyl thiourea and several derivatives of 2-thiohydantoin were two to five times as active as thiourea but were somewhat more toxic, especially the thiohydantoins.

A second series of active compounds included a number of aniline derivatives such as p-aminobenzoic acid, p-aminophenylacetic acid and related compounds and all of the commonly used sulfonamides. This class of substances, with the exception of the highly active sulfadiazine, was considerably less active than the thioureas.

From a clinical point of view thiourea and thiouracil appeared to be the most promising compounds and were therefore used in studies on normal persons and on patients with hyperthyroidism.

The substances under investigation were administered by mouth in the form of tablets or in capsules. The larger quantities were given in divided doses over each twenty-four hours, the smaller in a single dose after the evening meal. Frequent determinations of the basal metabolic rate and serum cholesterol were made.

Doses Administered for Short Periods of Time Without Detectable Toxic Effects and with No Change in the Basal Metabolic Rate

Diagnosis	Compound	Daily Dose, Gm.	Duration of Treatment, Days	Total Dose, Gm.
Cardiac decompensation...	Thiourea	2.0	17	34
Rheumatoid arthritis.....	Thiourea	2.0	13	26
Diabetes mellitus.....	Thiouracil	1.0	7	7
Fever (cause unknown)....	Thiouracil	0.4	30	12
Carcinoma of the thyroid.	Thiouracil	1.0	24	24
Hyperthyroidism.....	Thiourea	0.5-1.5	5	5
Hyperthyroidism.....	Thiouracil	0.6-1.0	10	8.4
Hyperthyroidism.....	Sulfadiazine	5.0-10.0	10	56

PRELIMINARY EXPERIMENTS

Data on the first 8 cases studied are shown in the accompanying table. Four persons exhibiting no evidence of hyperthyroidism were treated; 2 received 2 Gm. of thiourea daily and 2 received 0.4 and 1.0 Gm. of thiouracil, respectively. Treatment was continued for thirteen to thirty days and during this period no change in the basal metabolic rate occurred; the patients exhibited no signs and experienced no symptoms that could be attributed to the drugs.

One patient with advanced cardiac decompensation was treated with 1 Gm. of thiouracil daily for twenty-four days. This patient had a large nodular thyroid gland and a metabolic rate of + 20 to + 30 per cent under conditions which were not basal. No definite lowering of the metabolic rate occurred during treatment and at operation a carcinoma of the thyroid was found. The remainder of the gland was composed of nodules of colloid filled alveoli with uniformly flat epithelium.

This work was done under the auspices of the University Committee on Pharmacotherapy.

From the departments of Medicine and Pharmacology, Harvard Medical School, and the medical clinic of the Peter Bent Brigham Hospital.

The thiouracil was supplied by Dr. R. O. Roblin, American Cyanamid Company, Stamford, Conn., and Dr. B. W. Carey of the Lederle Laboratories, Inc., Pearl River, N. Y.

1. Mackenzie, J. B.; Mackenzie, C. G., and McCollum, E. V.: Effect of Sulfanilylguanidine on the Thyroid of the Rat, Science **94**: 518-519 (Nov. 28) 1941.

2. Richter, C. P., and Clisby, K. H.: Graying of Hair Produced by Ingestion of Phenylthiocarbamide, Proc. Soc. Exper. Biol. & Med. **48**: 684-687 (Dec.) 1941; Toxic Effects of Bitter Tasting Phenylthiocarbamide, Arch. Path. **33**: 46-57 (Jan.) 1942.

3. Kennedy, T. H.: Thioureas as Goitrogenic Substances, Nature **150**: 233-234 (Aug. 22) 1942.

4. Mackenzie, C. G., and Mackenzie, J. B.: Effect of Sulfonamides and Thioureas on the Thyroid Gland and Basal Metabolism, Endocrinology **32**: 185-209 (Feb.) 1943. Astwood, E. B.; Sullivan, J.; Bissell, Adele, and Tyslowitz, R.: Action of Certain Sulfonamides and of Thiourea on the Function of the Thyroid Gland of the Rat, Endocrinology **32**: 210-225 (Feb.) 1943.

5. Astwood, E. B.: The Chemical Nature of Compounds Which Inhibit the Function of the Thyroid Gland, J. Pharmacol. & Exper. Therap., to be published.

The first 3 cases of hyperthyroidism were treated for short periods of time during the usual preoperative period of rest in bed. Treatment was continued for five, ten and ten days, respectively. These experiments were made before it was recognized from studies on animals that a considerable latent period was to be expected before the metabolic rate would fall. The slight decreases in metabolic rate that occurred during these periods were not greater than may have occurred from rest alone. Microscopic examination of the portions of the thyroids removed at operation did not reveal any changes which could with certainty be attributed to the treatment.

Subsequent studies were confined to the administration of thiourea and thiouracil for periods of three weeks or longer to patients with hyperthyroidism. Three cases which have been observed for a sufficiently long period of time are reported:

REPORT OF CASES

CASE 1.—A man aged 58, a janitor, entered the hospital because of increasing weakness, progressive weight loss, nocturia, polyuria and dyspnea of one year's duration. Two months prior to admission these symptoms became accentuated and on consultation at another hospital diabetes mellitus was diagnosed and treatment instituted. Fifteen units of protamine zinc insulin daily and a low carbohydrate diet resulted in a partial control of the glycosuria, but there was no symptomatic improvement and the patient entered this hospital for further investigation. Examination revealed a moderate degree of diffuse enlargement of the thyroid gland, a fine tremor of the hands and a warm moist skin. The basal metabolic rate was + 25 to + 35 per cent on repeated determinations, the blood cholesterol was 130 mg. per hundred cubic centimeters and the glycosuria persisted in spite of an increase in insulin to 40 units daily.

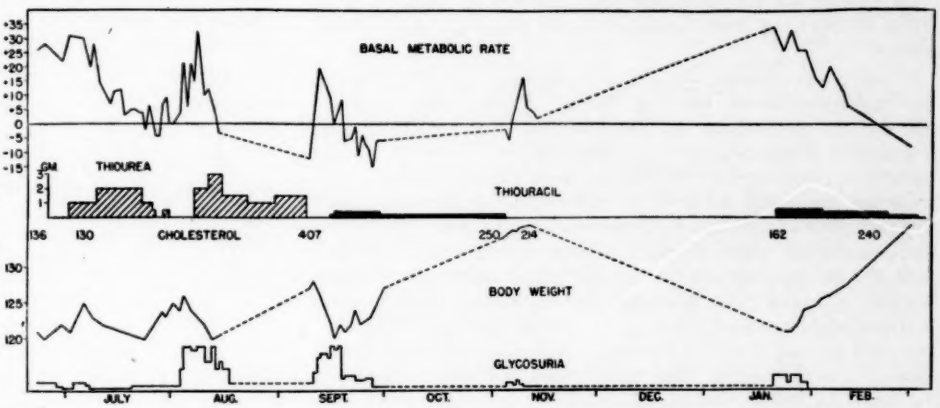

Chart 1.—Changes in the basal metabolic rate, serum cholesterol level, body weight and degree of glycosuria in case 1 during four periods of treatment with thiourea and thiouracil. Insulin was discontinued on July 21. The broken lines represent periods when the patient was not under observation in the hospital.

Details of treatment and subsequent course are shown in chart 1. Thiourea was given orally in 0.5 Gm. doses twice daily for eight days and four times daily for the next thirteen days. The metabolic rate began to fall on the ninth day of treatment and was normal by the sixteenth day. On the tenth day of treatment hypoglycemic symptoms became frequent and on discontinuation of the insulin the urine sugar remained low, never exceeding a trace. One week after the thiourea was discontinued the metabolic rate again became elevated and the glycosuria returned. Resumption of treatment with thiourea was followed by a prompt return of the metabolic rate to normal and a great decrease in the glycosuria. After a period of three weeks at home and one month after the beginning of the second course of thiourea the patient reentered the hospital for study. At this time there was a maculopapular eruption on the face and on the extensor aspects of the extremities similar to that seen in chronic bromide intoxication. The face appeared to be edematous, the basal metabolic rate was — 12 per cent and the blood cholesterol was 407 mg. per hundred cubic centimeters. The drug was discontinued, the rash cleared within four days, the basal metabolic rate rose to a maximum of + 19 per cent and glycosuria returned. A third course of treatment was begun, thiouracil being substituted for the thiourea in a dose of 0.4 Gm. daily. After the metabolic rate had fallen and the glycosuria decreased, the dosage was decreased to 0.2 Gm. daily and the patient returned home. After forty days at home he returned in good condition, having regained his normal body weight. The metabolic rate was — 2 per cent, the blood cholesterol was 250 mg. per hundred cubic centimeters and there was a trace of sugar in the urine. The thyroid gland was found to be approximately the same size as it had been when treatment was first begun. After he was hospitalized the drug was discontinued. There was a transient and questionably significant elevation of the basal metabolic rate (maximum + 16 per cent on one reading), and as the urine remained virtually sugar free the patient was discharged home without treatment. He obtained employment as a locomotive engineer and was able to carry heavy duties for a period of two months. However, weakness gradually returned and with this he noted nervousness, dyspnea, palpitation and pronounced weight loss. When he was hospitalized for the fourth time the metabolic rate was + 35 per cent and the thyroid gland was distinctly smaller than it had been previously. Treatment with 0.6 Gm. of thiouracil daily was begun. The metabolic rate fell to + 13 per cent in twelve days, when the dosage was reduced to 0.4 Gm. daily. On the thirty-second day the dosage was further reduced to 0.2 Gm. daily and on the thirty-ninth day the basal metabolic rate had fallen to — 8 per cent. This dosage was continued and the patient returned to work. During this time the thyroid gland slowly increased in size to approximately that noted at the beginning of treatment. The patient has continued to take 0.2 Gm. of thiouracil daily and has remained in good health for a period of two months.

CASE 2.—A man aged 37, a truck driver, first noted symptoms of nervousness, anxiety and tremor following an automobile accident five years before entering the hospital. After three years of moderate symptoms he began to lose weight and to tire easily. Toxic diffuse goiter was diagnosed on his examination for entry into the army and he was referred to the hospital for treatment. At this time he had lost a total of 35 pounds (16 Kg.) but was not acutely ill. There was moderate exophthalmos and a pronounced stare but minimal lid lag. The skin was warm and moist; the thyroid gland was diffusely enlarged, soft and not nodular. The basal metabolic rate was + 45 per cent on the first day and + 26 per cent after three days of rest in bed. The serum cholesterol was 84 mg. per hundred cubic centimeters. All other findings were essentially normal. Thiouracil was given in a dose of 0.2 Gm. five times daily for twenty-seven days and then 0.4 Gm. five times daily for six days. Symptomatic improvement became apparent during the second week of treatment, the serum cholesterol increased to 206 mg. per hundred cubic centimeters and although the metabolic rate steadily decreased it did not reach normal levels. The body weight increased 20 pounds (9 Kg.) during four weeks (chart 2). When the dosage of thiouracil was increased to 2 Gm. daily the patient began to suffer vague malaise which he did not admit until subsequently. He was discharged from the hospital on the thirty-fifth day of treatment and was to continue to take 1.0 Gm. of thiouracil daily. Within thirty-six hours of leaving the hospital he returned with a severe pharyngitis and a temperature of 105 F.

There proved to be no demonstrable granulocytes in the blood smear and the total white cell count was 1,100. The drug was discontinued and he was treated with sulfathiazole, liver extracts and pentnucleotide. After a severe illness he recovered; granulocytes returned in normal numbers after being absent from the blood smear for seven days. The patient was given 1 cc. of compound solution of iodine daily following

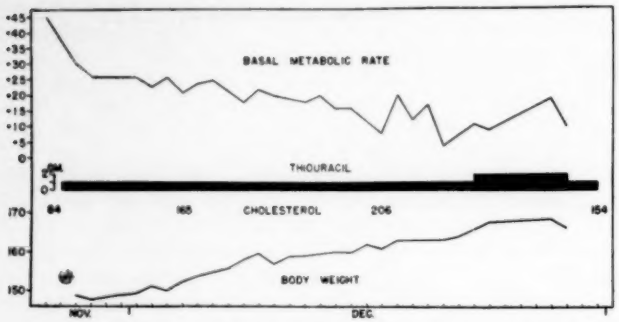

Chart 2.—Effect of a large dose of thiouracil on the basal metabolic rate, serum cholesterol level and body weight in case 2. During the last seven days of treatment symptoms of toxicity developed.

this episode but the metabolic rate returned to levels of + 30 to + 40 per cent three weeks after the thiouracil was discontinued.

CASE 3.—A woman aged 43, a housewife, had been treated for hyperthyroidism for five years. Three years prior to the current episode, subtotal thyroidectomy was performed with subsequent complete relief of symptoms for a period of nine months. Nervousness, irritability and general malaise then returned and continued to be of major concern; treatment with iodine, phenobarbital and estrogens brought no relief. The basal metabolic rate during this period was + 20 per cent and the patient was 15 pounds (6.8 Kg.) under her normal weight. The thyroid gland was not palpable, and there was a moderate degree of stare but no exophthalmos. The skin was warm, and the face flushed. Thiouracil was given in a dose of 0.2 Gm. three times daily while the patient continued to work at home. After one week of treatment there was a noticeable improvement in the nervous irritability and the patient noted a general sense of well being. The basal metabolic rate fell in fourteen days to + 7 per cent and in thirty-five days to — 6 per cent. One week after the drug was discontinued the basal metabolic rate was — 4 per cent and in five

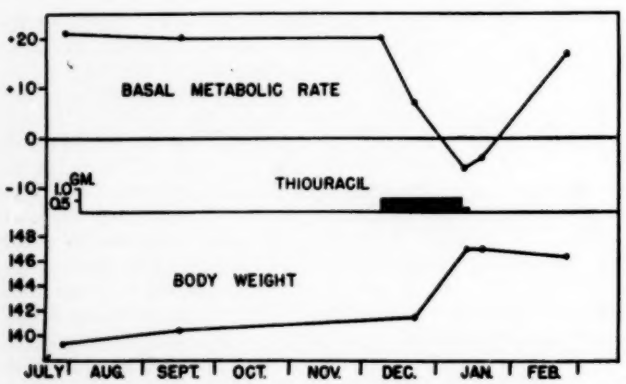

Chart 3.—Decrease in the basal metabolic rate and increase in body weight following the administration of thiouracil in case 3. Five weeks after the drug was discontinued symptoms returned and the metabolic rate became elevated. A second course of treatment with 0.2 Gm. of thiouracil daily during March resulted in a decrease in the basal metabolic rate to + 3 per cent and a further increase in the body weight to 152 pounds (69 Kg.)

weeks + 17 per cent (fig. 3). Symptoms returned during the fourth week but there was no loss of weight. Thiouracil was resumed in a dose of 0.2 Gm. daily, symptoms were again controlled after one week of treatment, the metabolic rate returned to normal and the patient has remained well on this treatment for two months.

COMMENT

These preliminary studies indicate that thiourea and thiouracil may be useful in the control of hyperthyroidism. However, a true evaluation of the merits and dangers of such therapy will require the observation of a large number of cases over a prolonged period of time.

Compounds of the type used in this investigation have never before been administered to human beings except in isolated instances when small single doses were given for studies on intermediary metabolism. Possible toxic reactions of an acute or chronic nature may occur and in the few cases thus far studied one severe and several mild episodes were observed. The occurrence of agranulocytosis (case 2) is a most serious contraindication to any form of drug therapy, and it will be of importance to determine whether this type of reaction to thiouracil represents an idiosyncrasy or whether it is the result of too large a dose. Thiourea is apparently the least toxic substance of the entire series, but for clinical purposes it has the disadvantage of imparting a characteristic odor to the breath, and with some persons it is disagreeable to the taste. The only evidence of toxicity thus far encountered with thiourea was a skin rash in case 1. Thiouracil is apparently free of these disadvantages, and although it is more active it may prove to be more toxic.

There appears to be a variable latent period following the initiation of treatment before the metabolic rate begins to fall, and a similar although somewhat shorter period before clinical improvement is subjectively and objectively apparent. This delay in the effect accords well with the experiments in animals that have been referred to, in which it was noted that the lowering of metabolism coincided in time with a complete or nearly complete loss of detectable colloid from the thyroid gland. If the concept that these drugs prevent the synthesis of thyroid hormone is correct, one might expect that the rate of metabolism would remain nearly constant as long as the store of thyroid hormone in the gland was adequate to supply the organism. When this store nears exhaustion, the decreased rate of thyroid hormone synthesis becomes apparent in the fall of the basal metabolic rate. Support for this explanation is given by the failure of 4 persons with normal thyroid glands to show a decrease in metabolism when the drugs were administered for periods of two to four weeks, while the cases of hyperthyroidism responded within ten to fourteen days. It is known that the store of thyroid hormone in hyperplastic glands is greatly decreased, while that of the normal thyroid is sufficient, if steadily released, to maintain the metabolism of a normal person unchanged for a period of one to three months. As the hyperplastic gland is presumably secreting at an increased rate, one might reasonably expect that its small store of preformed hormone would become exhausted much more rapidly than would that of a normal gland.

Further studies will be necessary in order to determine the optimal therapeutic regimen for long term treatment. Certain cases of hyperthyroidism will probably require treatment over many months or even years, while in other cases the state of hyperthyroidism is apparently temporary and self limited. It may be possible by the use of drugs of this type to maintain such patients in normal health during this period of temporary disturbance.

A rough estimate of the required dosages of thiourea and thiouracil may be formed from the data given. A daily dosage of 0.4 to 0.6 Gm. of thiouracil would appear to have been adequate for the initial treatment of the elevated rate of metabolism in cases 1 and 3, and 0.2 Gm. daily appeared to be an adequate maintenance dose in case 1. Possibly as much as 1.0 Gm. daily is excessive, and from case 2 it is apparent that 2.0 Gm. daily was not more effective than 1 Gm. It may be that this large dose contributed to the severe toxic episode which followed.

Thiourea is about one third as active as thiouracil when tested in rats, and therefore 1 to 2 Gm. daily of the former might be considered an adequate dose for initial therapy, with about 0.5 Gm. daily for maintenance. In case 1 a maintenance dose of 1.5 Gm. daily of thiourea was too large, as symptoms and signs of early myxedema resulted after a period of five weeks and there was evidence of chronic toxicity in the form of a skin rash. A simple chemical method for the determination of the concentration of these substances in the blood might prove to be of value in estimating the proper dose by offering a means of comparison with the more exact determination of dosage requirements that can be made on experimental animals.

In the few cases treated thus far, thyroid enlargement has not been observed with the possible exception of case 1. In this instance there was a distinct decrease in thyroid size when treatment was discontinued and a return of a slight enlargement when treatment was reinstituted. The human thyroid gland usually responds slowly with change in size, and perhaps it was to be expected that little detectable enlargement would occur during a period of only a few months of drug therapy.

These results are considered to be further evidence that thioureylene derivatives inhibit the formation of thyroid hormone and that they may be employed in the treatment of hyperthyroidism.

SUMMARY

The daily administration of 1 to 2 Gm. of thiourea or of 0.2 to 1 Gm. of thiouracil to hyperthyroid persons resulted in the relief of symptoms and the return to normal of the serum cholesterol and the basal metabolic rate. There were observed a latent period of one to two weeks before these effects occurred, a sustained remission during treatment, and a return of hyperthyroidism when therapy was discontinued.

25 Shattuck Street.

Tons of Saltpetre.—Man needs 8 Gm. of nitrogen daily, since protein is a nitrogen compound and the body uses up 50 Gm. of protein daily which must be replaced. Since protein is essential for the building of protoplasm, no creature can live without nitrogen. An animal can be overfed with foods lacking in nitrogen, such as fat, sugar and starch, yet it will die because it cannot build up its necessary proteins. On the other hand, however, a dog can be kept alive on a diet consisting exclusively of amino acids, the nitrogenous compounds from which proteins are constructed, because fats and carbohydrates, the two other chief constituents of the body, can be formed from protein. The quantity of nitrogen contained in the atmosphere surrounding the earth is immense. It has been estimated that 12 billion tons of saltpetre could be obtained from the air over the city of London. With this quantity the nitrogen needs of the world could be satisfied for several thousand years.—Kahn, Fritz: Man in Structure and Function, volume 1, translated from the German and edited by George Rosen, M.D., New York, Alfred A. Knopf, 1943.

A COMBINED METHOD FOR THE TREATMENT OF DELAYED MENSTRUATION

AND A TEST FOR EARLY PREGNANCY: A PRELIMINARY REPORT

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Many drugs and endocrine products which have been used for the purpose of inducing menstrual flow may be considered harmful when administered to a woman in whom amenorrhea is due to early pregnancy. At one time or another probably every obstetrician and gynecologist has experienced difficulty in distinguishing between delayed menstruation and early pregnancy by physical examination, especially when facilities for laboratory diagnostic procedures have not been available. After treating 57 cases of menstrual delay with prostigmine methylsulfate I have gained the impression that this drug offers a possible solution to both aforementioned problems in selected cases.

The rationale for prostigmine therapy in menstrual delay is found in the premise that, in the physiology of normal menstruation, the events which lead to the ultimate appearance of menstrual bleeding are initiated or at least preceded by a state of hyperemia of the uterine tissues. This hyperemia is always present in the cyclic menstrual flow and is produced by estrogenic substances, which, acting on the uterus, release acetylcholine in this organ. The acetylcholine thus produced in turn causes vasodilatation. It has been demonstrated that this hyperemia is under the control of the parasympathetic nervous system and that nonspecific chemical agents can produce hyperemia in the uterine tissues similar in all respects to that resulting from the action of estrogenic substances.[1]

Since uterine hyperemia seems to be an important as well as a constant feature of normal cyclic menstrual bleeding in women, it may be that a temporary absence of adequate hyperemia, due to lack of vascular responsiveness, may well be a factor in the delay of menstruation in some cases, endocrine function per se being perfectly adequate. In addition, if the fact is considered that the parasympathetic division of the autonomic system controls uterine hyperemia, then such important conditions as physical, mental and emotional strain may exert a decided influence on the menstrual cycle in women in whom there is no evidence of endocrine deficiency and in whom the organic disease is not a contributing factor.

At any rate, assuming that diminished acetylcholine in the uterine endometrium and consequent lack of adequate vascularity of this organ is the causative factor in a given instance of menstrual delay, it would seem logical either to increase the acetylcholine content by administering this drug or to potentiate the action

From the Woman's Hospital.

1. Hechter, Oscar; Lev, Morris, and Soskin, Samuel: The Relation of Hyperemia to the Action of Estrin, Endocrinology **26:** 73 (Jan.) 1940. Reynolds, S. R. M.: Acetylcholine Content of Uteri Before and After Administration of Estrin to Ovariectomized Rabbits, J. Physiol. **95:** 258 (March) 1939. Markee, J. E.: An Analysis of the Rhythmic Vascular Changes in the Uterus of the Rabbit, Am. J. Physiol. **100:** 374 (April) 1932. Astwood, E. B.: The Time Relationship in the Growth and Water Exchange of the Uterus Following Estrogenic Stimulation, Anat. Rec. (supplement 3) **70:** 5, 1938. Myerson, Abraham; Rinkel, Max; Lemon, J., and Myerson, P.: Human Autonomic Pharmacology: X. The Synergism of Prostigmine and Mecholyl, J. Pharmacol. & Exper. Therap. **60:** 296 (July) 1937. Perlow, Samuel: Vasodilating Action of Prostigmine, ibid. **66:** 66 (May) 1939. Dale, H. H.: William Henry Welch Lectures: Acetylcholine as Chemical Transmitter of Effects of Nerve Impulses: History of Ideas and Evidences; Peripheral Autonomic Actions: Functional Nomenclature of Nerve Fibers, J. Mount Sinai Hosp. **4:** 401 (Jan.-Feb.) 1938.

of that amount of the drug which is already present in the tissues. Prostigmine accomplishes the latter, theoretically if not actually, through inhibition of cholinesterase, the tissue enzyme which destroys acetylcholine. Needless to say, any drug which would exert a damaging effect on pregnancy would be highly objectionable. Preliminary experiments on impregnated rats had established the safety of this drug when it was administered in excessively large doses. These animals continued to full term pregnancy, producing normal and healthy litters.[2] The same results were obtained when prostigmine was given to women in various stages of pregnancy. In no case was there an abortion or premature labor, and no other untoward side effects were noted.[3] With this assurance the present study was begun.

TABLE 1.—*Patients Whose Previous Menstrual Histories Had Been Normal or Manifested Only Slight Variations in Regularity*

Group	No. of Cases	Age	Delay in Days	Aschheim-Zondek Test	Menstruation Occurred	Pregnancy
1	18	19-39	10-90	Positive	—	+
2	21	20-49	5-52	Negative	+ 7-72 hours after treatment	—
3	18	20-45	5-60	Not done	+ ¼-48 hours after treatment	— 13 cases
					—	+ * 5 cases

* Subsequent clinical observation confirmed the presence of pregnancy.

PROCEDURE

Each patient who presented herself for the treatment of delayed menstruation was subjected to a careful history taking and physical examination. After endocrine disorders and organic diseases were ruled out, as many of these women as could arrange it, about 70 per cent of the total, were given a Friedman modification of the Aschheim-Zondek pregnancy test in order that early pregnancy might be either ruled out or established. All of the Aschheim-Zondek tests were performed before the administration of the treatment.

Each patient received an injection of 1 mg. of prostigmine methylsulfate on three consecutive days. If the menstrual flow was established after the first or second injections, further treatments were deemed unnecessary. If no menstrual flow occurred within seventy-two hours after the last injection, a tentative diagnosis of pregnancy was made until this state was confirmed by an Aschheim-Zondek test or subsequent clinical observation. The ages of the patients ranged from 19 to 49. Women who, regardless of their age, had long standing records of irregular menstruation, and those in whom the amenorrhea was definitely due to an endocrine dysfunction or organic disturbance, were considered unsuitable for treatment. Nevertheless, for the sake of completeness of the study, a number of such cases were included.

RESULTS AND COMMENT

In this study of 57 cases prostigmine methylsulfate was used as a therapeutic agent in delayed menstruation and was found to be successful in inducing a normal menstrual flow in all women who were not pregnant. The results were uniform and no ill effects were noted. While I was utilizing this drug as a therapeutic measure for delayed menstruation, its value as a diagnostic procedure in early pregnancy was observed, and its accuracy as a diagnostic test for early pregnancy was compared favorably to the Friedman modification of the Aschheim-Zondek test. All women who were not pregnant, and whose Aschheim-Zondek test was negative before, menstruated normally following prostigmine administration. No ill effects were observed in early or late pregnancies. All Aschheim-Zondek positive women and all others not subjected to the Aschheim-Zondek test, but in whom the state of pregnancy was confirmed by subsequent clinical observation, successfully continued their pregnancies. In fact, at the time this report was compiled, some of these women had already delivered normal healthy babies. Of 18 patients who did not have the Aschheim-Zondek test, 5 in whom the amenorrhea had existed from five to sixty days gave clinical manifestations of early pregnancy. These patients did not menstruate after the administration of prostigmine. Subsequent clinical observations confirmed the presence of pregnancy in these women. All the patients who had amenorrhea, and whose previous menstrual history had been relatively normal, but who failed to menstruate after treatment with prostigmine, were tentatively diagnosed as pregnant and subsequent clinical events substantiated this diagnosis. No errors were noted.

The menstrual flow induced by the treatment did not differ in any manner from the normal as to the amount, quality and character. An occasional woman reported a slightly increased flow during the first and second days of the period.

The number of injections required to induce menstruation varied somewhat. The majority of the women required three injections, some menstruated after two injections, and in others the flow followed after the first injection. An occasional woman required four injections.

The time of the onset of menstruation following the treatment ranged from a quarter of an hour to seventy-two hours, the average time for the entire group being seventeen hours and thirty-two minutes after the last injection.

Prostigmine as a therapeutic measure for amenorrhea had no effect on those women whose past menstrual history was marked by extreme irregularities and who manifested evidences of endocrine deficiencies with obesity, male distribution of pubic hair or concomitant organic disease. Three such cases were treated. In each the Aschheim-Zondek test was negative, yet none responded to treatment. Later a large number of such cases were treated with similar results. This would seem to indicate that prostigmine is effective in only those women whose previous menstrual histories have been more or less regular and who have had no severe endocrine disturbances or organic diseases. Its use as a therapeutic agent in delayed menstruation should be confined to this type.

TABLE 2.—*Patients Who in Addition to Their Previous Records of Menstrual Irregularities Also Manifested Endocrine Deficiencies and Other Organic Diseases*

Age	Delay in Days	Aschheim-Zondek Test	Menstruation	Pregnancy
20-30	21-140	Negative	None	None

2. Soskin, Samuel; Wachtel, Hans, and Hechter, Oscar: The Treatment of Delayed Menstruation with Prostigmine: A Therapeutic Test for Early Pregnancy, J. A. M. A. **114**: 2090 (May 25) 1940.
3. Robins, Spotswood: Prostigmin in the Induction of Labor, Virginia M. Monthly **67**: 374 (June) 1940.

Some of the cases are briefly presented because of their interesting features:

CASE 34.—A married woman aged 29, nullipara, nulligravida, with negative Aschheim-Zondek test, gave a history of regular periods of twenty-eight to thirty days and five day duration until March 1, 1941. In the course of the following six months she had only slight spotting for two or three days, occurring at the time of the expected period each month. When she presented herself for the treatment, even this spotting had been delayed for thirty days. She was given 1 mg. of prostigmine methylsulfate daily for three consecutive days. Seven days after her last injection she began to menstruate normally for the first time in seven months. When last seen she reported that she had had two more normal periods of twenty-nine day interval and of five day duration.

CASE 60.—A married woman aged 37, tertipara, quadrigravida, whose uterus appeared to be the size of at least a four month pregnancy but the fundus was firm and irregular in shape and the cervix was not soft, was diagnosed as having myomata uteri. Interestingly enough, the patient was scheduled for operation, and she was advised to be treated at the clinic in preparation for the operation. While she was receiving treatments, she reported that her menstruation was delayed ninety days. Even at that time the appearance of the uterus and the cervix was not indicative of pregnancy. Nevertheless, because of her amenorrhea she was given three injections of prostigmine methylsulfate. No menstruation followed. On the basis of previous experience, diagnosis was changed to myomata uteri and pregnancy. An Aschheim-Zondek test was performed. It was reported to be positive. Thus the hysterectomy was deferred and the patient was referred to the obstetric clinic for proper treatment. In this case the therapeutic test for delayed menstruation was of definite value in a situation in which the clinical manifestations of pregnancy were confused.

CASE 52.—A single woman aged 26, nullipara, nulligravida, had a regular menstrual cycle of twenty-seven day interval and seven day duration. She suffered from severe dysmenorrhea, very profuse flow and a large number of clots. The clinical and physical examination did not reveal any pathologic condition in the pelvis. There was no history of delayed menstruation. However, her peculiar problem was that she expected to have her next regular menstruation in ten days, but her wedding day was also scheduled for the same day. Because of unusual circumstances over which she had no control, the wedding day could not be changed. She wished to receive treatments in order to advance the date of her menstruation by several days. She was given 1 mg. of prostigmine methylsulfate daily for four consecutive days. Twelve hours after the last injection she started to menstruate. This menstrual flow was remarkable in that it was induced six days in advance of the expected date in a woman whose menstrual history had been extremely regular. Furthermore, she reported that for the first time in her life the flow lasted only five days instead of the usual seven, was free of all discomfort, and there was a complete absence of clots. Of further interest was the fact that the two subsequent periods occurred at exactly twenty-eight day intervals, and each lasted only five days, with normal flow, no clots and no discomfort. This patient is under observation.

CASE 17.—A woman aged 18, nullipara, nulligravida, had severe dysmenorrhea since the onset of catamenia. At the time she applied for medical treatment her menstruation was delayed by fifteen days. She was given 1 mg. of prostigmine methylsulfate. Normal menstrual flow followed four hours after the administration of the drug. This period and the following one were free of discomfort.

Granted that some patients might have menstruated even if they had not received prostigmine, nevertheless such consistently uniform results can hardly be disregarded. This combined method for the treatment of delayed menstruation and a test for early pregnancy seems of practical value and a perfectly safe procedure to use, no ill effects on the pregnant or the nonpregnant woman having been observed.

SUMMARY

A nonspecific chemical agent, prostigmine, which is pharmacologically and physiologically related to physostigmine, has been used for the treatment of delayed menstruation, and its diagnostic value as a test in early pregnancy observed.

1. Hyperemia of the uterine tissues is essential in the cyclic menstrual bleeding.

2. Estrogenic substances release acetylcholine in the uterus, and the latter drug produces hyperemia in this organ.

3. Certain nonspecific agents have the property of potentiating the action of acetylcholine which is already in the tissues, thus causing hyperemia of the uterus and inducing menstrual flow.

4. This property of prostigmine was utilized in the successful treatment of delayed menstruation, and the method was found to be safe.

5. Absence of menstruation following treatment of suitable cases with prostigmine is considered indicative of the presence of pregnancy. The procedure may be used as a diagnostic test for pregnancy.

6. Prostigmine has no value in delayed menstruation when amenorrhea is due to organic diseases and endocrine deficiencies.

40 East Sixty-First Street.

FAMILIAL ERYTHROBLASTIC ANEMIA THALASSEMIA—COOLEY'S ANEMIA

NOTES ON ITS PRIMITIVE TREATMENT

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Since Cooley's [1] definite crystallization of a group of clinical findings as a disease entity, familial erythroblastic anemia has received worldwide recognition and confirmation. Cooley stressed a congenital cause, evidence of bone marrow stimulation, leukocytosis, absence of increased fragility of the red blood cells, splenomegaly, osteoporosis and a peculiar mongoloid facial appearance.

As reports of cases appeared, the scope of investigation widened until it became clear that familial erythroblastic anemia was in reality a severe and usually fatal form, in childhood, of what is essentially a hereditary, chronic disease of Mediterranean races, characterized by splenomegaly and certain characteristic changes in the blood. In fact, this greatly widened concept of the disorder led Whipple and Bradford [2] to suggest the name "thalassemia" or "Mediterranean disease" rather than the term "erythroblastic anemia." Indeed

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1. Cooley, T. B.; Witwer, E. R., and Lee, Pearl: Anemia in Children with Splenomegaly and Peculiar Changes in Bones: Report of Cases, Am. J. Dis. Child. **34**: 347-363 (Sept.) 1927. Cooley, T. B., and Lee, Pearl: Sickle Cell Anemia in a Greek Family, ibid. **38**: 103-106 (July) 1929.

2. Whipple, G. H., and Bradford, W. L.: Racial or Familial Anemia of Children, Am. J. Dis. Child. **44**: 336-365 (Aug.) 1932.

in our opinion the latter term cannot help but become confused with fetal erythroblastosis. The use of the word anemia is also misleading, since many of these patients may never exhibit a significant degree of anemia.

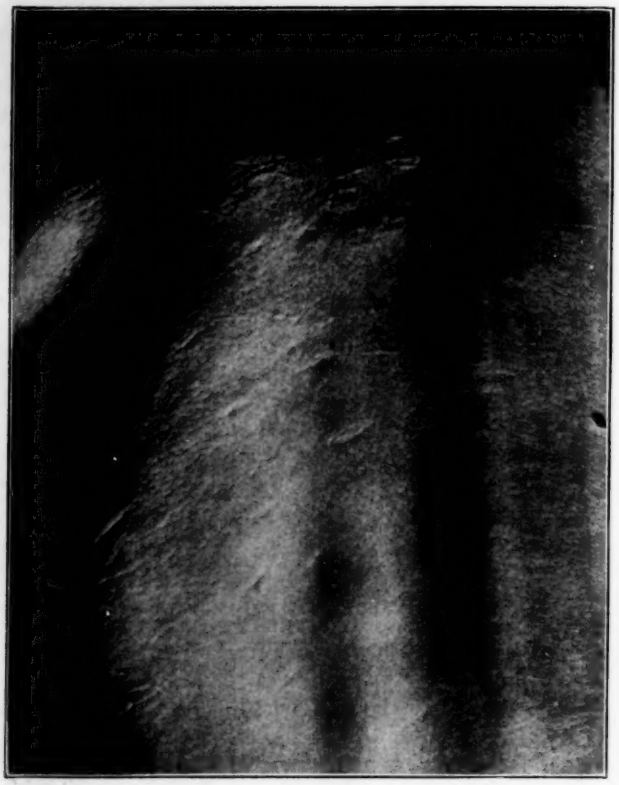

Fig. 1.—Appearance of some of the hundreds of tiny scars on the torso, the result of seven years of primitive "cupping."

As now interpreted,[3] this is a familial, hemopoietic disorder occurring among the Mediterranean races. The cases reported have been found in persons of Greek, Armenian, Italian or Sicilian parentage. It is seen in its most severe form in childhood, in which it is characterized clinically by fever, continuous or intermittent, and is frequently associated with chills. There is severe splenomegaly and often severe hepatomegaly. The skin is icteric without biliuria. This appearance is probably due to the deposition of an iron containing pigment in the skin as well as in all internal structures and is comparable to that found in hemochromatosis.[4] A typical mongoloid facies has been described. The blood picture is characterized by severe anemia which is hypochromic, microcytic and erythroblastic in type. Polychromatophilic, stippled and "target" cells [5] and occasionally normoblasts are found in the circulating blood. The red cells possess an abnormally increased resistance to hemolysis by hypotonic solutions of sodium chloride. Osteoporosis can frequently be demonstrated in the long bones and skull by x-ray examination, and as the condition progresses it is gradually altered by the appearance of a compensatory lamellar striation which tends to replace the marrow.

This form of the disease appears in infancy as early as the second month and usually terminates in death within a few years. There are all gradations from this to a type found in which the inherent defect is not so pronounced. There may be little or no anemia, fever or positive physical manifestations. In many instances the only stigma of the disease is an increased number of target cells in the circulating blood and an abnormal resistance of these cells to hemolysis. This phase of the disease is not incompatible with life, but the patients frequently complain of malaise and lack of strength. It is, however, often interspersed with episodes of anemia, increased weakness, chills and fever and susceptibility to intercurrent infection.

An effective treatment has not been found. Iron and liver therapy are of no benefit. Splenectomy tends to increase the anemia and is thus contraindicated.[2]

Death generally results from cardiac decompensation, secondary infection or the development of a hemorrhagic type of thrombopenic purpura.

Caminopetros [6] has studied the familial transmission of this disease in a focal area in Sicily. His observations indicate that it is transmitted as a mendelian recessive characteristic.

REPORT OF CASE

G. P. P., born Jan. 12, 1908 in Vroulia, Sparta, Greece, was admitted to the hospital on Sept. 17, 1942 with the statement that he was suffering from familial erythroblastic anemia. His chief complaints were shortness of breath on exertion, weakness and periods of rapid pounding of the heart. Before his induction into the Army on Aug. 22, 1942 he operated a candy store and restaurant. His story was interesting.

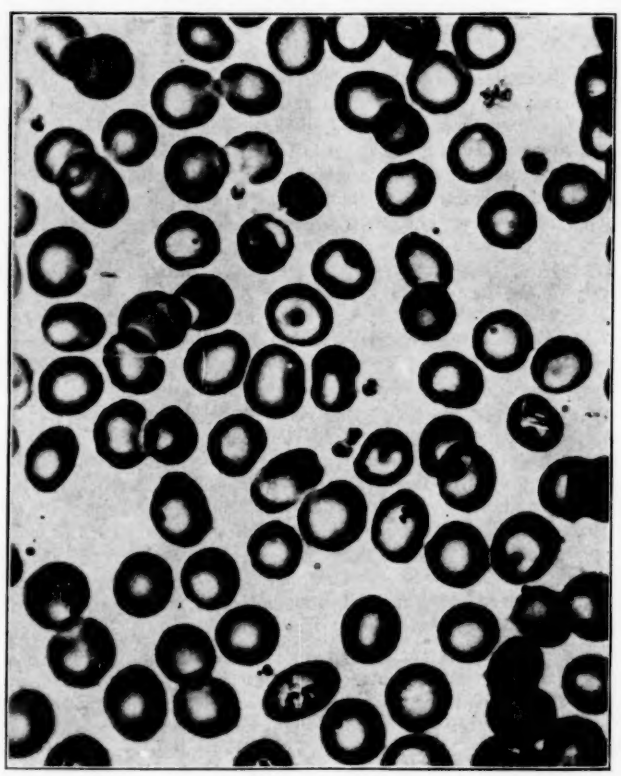

Fig. 2.—Smear of patient's blood. Several typical target cells are present.

Vroulia is a small town in Greece within a half hour's walk of the Mediterranean. When the patient immigrated to the

3. Wintrobe, M. M.; Matthews, Edward; Pollack, Roy, and Dobyns, B. M.: A Familial Hemopoietic Disorder in Italian Adolescents and Adults, J. A. M. A. **114**: 1530-1538 (April 20) 1940.

4. Whipple, G. H., and Bradford, W. L.: Mediterranean Disease—Thalassemia (Erythroblastic Anemia of Cooley), J. Pediat. **9**: 279-311 (Sept.) 1936.

5. Barrett, A. M.: Special Form of Erythrocyte Possessing Increased Resistance to Hypotonic Saline, J. Path. & Bact. **46**: 603-618 (May) 1938.

6. Caminopetros, J.: Recherches sur l'anémie érythroblastique infantile des peuples de le Méditerranée orientale; étude nosologique, Ann. de méd. **43**: 27-61 (Jan.) 1938; Recherches sur l'anémie érythroblastique infantile des peuples de le Méditerranée orientale; étude anthropologique, étiologique et pathogénique; la transmission héréditaire de le maladie, ibid. **43**: 104-125 (Feb.) 1938.

United States about 1922 his home town had a population of about 700 people. In his grandfather's time the town boasted 1,200. Despite natural increases, the graveyard had been filled by the ravages of this disease, which the patient had learned to accept with a fatalistic sort of philosophy. In his part of Greece it is called ἐλλόδους πυρετοῦς (ellodous peretous), literally chills-fever-blood disturbance. (The spelling and translation are the patient's.) It was a chronic wasting disease marked by bouts of chills, fever, sweating and "big stomach." Most of the newborn died within a year or two, and many who lived were sickly specimens. The differentiation from malaria was simple: one took quinine; if the chills and fever stopped, it was malaria.

The patient's paternal grandfather had been very thin and had had a "big stomach." Also occasionally he had coughed up blood. He died at about 45 years of age; during the last five years of his life he had been out of his mind. His wife had left as her legacy the reputation of having the "big stomach," bigger than any one else's. She had six children, four of whom apparently died of "ellodous peretous," three of these during early childhood and one, a son, shortly after his marriage. There remained then the patient's father and uncle. The uncle died in 1936 approximately at the age of 50. The remains had been sent to the University at Athens for an autopsy, the result being understood by the family to have revealed a "cancer in the spleen." The uncle's wife died at the age of 28 of unknown causes, but she left an only male child who had been born paralyzed and, by diligent hand feeding, had reached the age of 15 without walking or talking. The patient's father is still living at the age of 67. He has leakage of the heart and rheumatism. During childhood he was bothered by a large spleen but recovered. This condition recurred at 21 years of age, and he was bedfast until he was 29, when he practically recovered. Even yet he has occasional chills.

The patient's mother was said to have had a relatively severe form of the disease, and she died at the age of 47 with a greatly swollen abdomen. Most of her life her weight did not exceed 80 pounds (36 Kg.). She bore three sons and three daughters and in many respects must have been an unusual woman. She served as the midwife of Vroulia, and, since there was no physician within many miles, she was called on to treat everything and anything that presented, in addition to delivering a multitude of ill fated babies. She had her own ideas concerning "ellodous peretous" and believed it to come from bad air. She originated her own methods of treatment, believed in them and assiduously applied them to her children.

One of the patient's brothers died in Chicago of meningitis at the age of 15. Although born in Greece, he did not appear ever to have had an enlarged spleen. Another brother is 17 and almost blind, of unknown cause. He has severe anemia and his spleen is said to have been palpated on different occasions. One sister is living and well at 36 with no evidence of an enlarged spleen, although she was born in Greece. Another sister, born in Greece, died in Chicago at the age of 22 of anemia with an enlarged spleen. The sister, who died at the age of 23, presented an almost identical condition.

The patient is mildly surprised that he is alive. He was a sickly infant who could retain little food and hence was breast fed by his mother to the age of 4, when he stood alone for the first time. The first tooth appeared at 4½ years of age. For some time after this he was fed on diluted goat's milk. During his early childhood bouts of chills and fever were frequent, for which his mother had adopted the unique but time honored treatment of bleeding. Her method involved the lifting of five or six folds of skin in close proximity over the liver or spleen and nicking each with a knife. Then a tumbler was pressed over this area with a lighted piece of cotton inside. This consumed the oxygen and created a suction. These tumblers were left in place until they loosened of themselves, which was usually when about a third full of blood. As many as four or five tumblers would be used at one time. This procedure would be repeated at intervals during episodes of chills and fever and went on, in the patient's case, for seven or eight years. His torso is covered with literally hundreds of tiny scars (fig. 1). One sister endured this treatment for sixteen years.

Another striking form of treatment was that applied to the spleen. The children were taught to lean over any sharp edged piece of furniture, such as a table, and compress the spleen for as long as they could endure the resulting pain. The patient stated that a favorite method of his was to hook the edge of the spleen over the top edge of a fence and literally hang by the spleen, both feet off the ground. Spartan treatment, but the resulting improvement in his breathing would cause him to repeat this six or eight times a day!

At the age of 14 the patient and his father came to America on a freighter. He was so pallid that he spent hours on the boat pinching his cheeks to bring out some color. He was allowed admittance to Ellis Island only because he convinced the physician that he had been the victim of severe seasickness throughout the entire twenty-eight days of the voyage.

The patient does not specifically recall any childhood diseases. He had a tonsillectomy in 1923. Except for bouts of chills, fever and weakness he had no serious illness until 1939. At this time he had a "weak" period of typical chills, fever, enlarged spleen and anemia. An infection of the upper respiratory tract followed and was complicated by pleurisy with effusion on the right side. Spontaneous resolution occurred during a nine week stay in bed. However, dyspnea was severe because of the effusion and enlarged spleen. Mindful of his mother's teaching, he would spend hours leaning forward and partially hunched over a large shoe pressed against his spleen.

On physical examination most of the findings were not remarkable. The skin was a peculiar yellowish tinged muddy color, and the spleen was palpated 2 cm. below the costal margin. The skin of the torso was covered with hundreds of tiny scars. X-ray examination of the skull, humerus, femur and hands revealed no abnormality. Gastric analysis revealed a free acidity of 15 and a total acidity of 25.

Fig. 3.—Appearance of the daughter of the patient shortly before her death from familial erythroblastic anemia, showing the characteristic mongoloid facies.

One of us (C. M.) made detailed studies on blood and bone marrow (obtained by sternal puncture) with the following results: red blood cells 4,970,000, hemoglobin 14.2 Gm. or 92 per cent, platelets 894,000, reticulocytes 1.0 per cent; white blood cells 16,550 with the following differential count: basophils 1 per cent, eosinophils 2 per cent, stab cells 1 per cent, segmented cells 67 per cent, lymphocytes 20 per cent and monocytes 9 per cent. The white cells all appeared qualitatively normal and the red cells showed no significant variation in size. A large number of the cells, however, were typically target red cells (fig. 2). Venous blood showed a red cell count of 5,080,000, hemoglobin 13.8 Gm. and an actual packed red cell volume of 45 per cent. The indexes calculated from these values gave a mean corpuscular volume of 89 cubic microns (normal range 80 to 94), mean corpuscular hemoglobin 27 micromicrograms (normal range 27 to 32) and a mean corpuscular hemoglobin concentration of 31 per cent (normal range 33 per cent to 38 per cent). The fragility test showed a range of 0.38 to 0.25 as compared with the normal value of 0.42 to 0.30. There was therefore evidence of increased resistance of the red cells to hypotonic saline solution. The sternal marrow removed by aspiration was very cellular and was characterized by normal distribution of qualitatively normal myeloid and erythroid elements. There were no truly abnormal characteristics of the marrow and it could easily enough pass as being perfectly normal.

The patient's wife, aged 27, whom he married in 1933, was born in this country and has never had any evidence or

history of familial erythroblastic anemia. She has had four children. The first, a daughter, was born in July 1934 and died at 18 months of age. Autopsy is said to have confirmed a clinical diagnosis of familial erythroblastic anemia. The second, a son, was born Sept. 2, 1936 and is apparently in good health. A third child, a son, born in August 1937, died Dec. 31, 1938 of familial erythroblastic anemia, also confirmed at autopsy. The fourth child, a daughter, born June 19, 1939, died just before the age of 3 years of familial erythroblastic anemia, also confirmed at autopsy. The rather typical facies was present (fig. 3).[7]

COMMENT

The patient's history and his family history are typical in every respect of the disease described as familial erythroblastic anemia. It is noteworthy that the patient lived in this country continuously for eleven years before his marriage, and his wife was born in this country and did not present a family history of the disorder; yet three children born to this couple have died of typical familial erythroblastic anemia! If it was not for such instances, familial erythroblastic anemia could be said to present many of the symptoms of a chronic infectious disease with recurrent exacerbations.

On the one hand, chills, fever and splenomegaly occurring in one of the most notorious malarial regions of the world cannot be ignored as a possible manifestation of chronic malaria, particularly since some such cases may become quite resistant to quinine. On the other hand, it is exceedingly difficult to understand how chronic malaria could appear as an inherited characteristic. The belief is apparently widespread in Greece that such is possible from the following quotation taken from a Greek encyclopedia:[8] "The lamentable fact is that even the grandchildren of these individuals [suffering from malaria] may be born apparently healthy but through inherited characteristics develop this illness."

It seems obvious that similarities between familial erythroblastic anemia and malaria have led to confusion. Our patient said that in his locality in Greece the disease which we have described is known as ellodous peretous. This resembles very closely the Greek term for malaria, ἑλώδυς πυρετός (elodus peretos), or swamp fever. Yet our patient was emphatic in stating that his disease was not malaria. It might be of value to investigate cases of "chronic malaria" in other parts of the world with special attention paid to the red blood cells. It is possible that familial erythroblastic anemia may in some instances be the true diagnosis.

CONCLUSION

The case here presented verifies the present concept of familial erythroblastic anemia, namely the familial occurrence in a Mediterranean race of a peculiar wasting disease of varying degrees of severity and characterized by recurrent episodes of chills and fever, splenomegaly and often anemia with decided cellular irregularity, microcytosis and target cells distinguished by their increased resistance to hypotonic saline solution.

The primitive forms of treatment afforded this patient, i. e. bleeding and external pressure on the spleen, have so far not been improved on.

7. Dr. Ernest Nora, Columbus Hospital, Chicago, furnished the details concerning the patient's three children who died of familial erythroblastic anemia, including the photograph reproduced in figure 3.

8. Malaria, Great Greek Encyclopedia, Athens, Greece, Pyrsos Company Ltd., 1928, vol. **2**, p. 28.

Clinical Notes, Suggestions and New Instruments

TICK PARALYSIS

(REPORT OF A CASE IN NEW YORK)

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Tick paralysis is a definite clinical entity due to the bite of the tick and characterized by:

1. A sudden onset with severe ataxia, asynergia and paresthesia.
2. An ascending type of flaccid paralysis which may progress and in a few days result in death from bulbar involvement.
3. A dramatic improvement, with the disappearance of all symptoms in twenty-four to forty-eight hours, on the discovery and removal of the tick early in the disease, delayed removal sometimes being of no avail.
4. A 10 to 1 predominance in children as compared to adults.

Prodromal symptoms such as irritability and fatigue preceding the onset of the ataxia have been occasionally noted; elevation of temperature and convulsions in children have also been reported in some instances. The spinal fluid, in the few cases in which it was examined, was entirely negative.

Although tick paralysis is only briefly mentioned in most medical textbooks, the condition has long been recognized as one of frequent occurrence in both domestic animals and man and therefore is of great practical importance to physicians, especially in the northwestern part of the United States and Canada.

As far back as 1914 Todd[1] reported the occurrence of the typical symptoms in 6 children and 1 adult and called attention to the statement of a local physician that "in southern British Columbia practitioners always look for ticks on a child who has had convulsions."

In 1921 McCornack[2] described 13 cases of this syndrome observed in children and 1 in an adult and expressed the opinion that "if a thorough survey was made among physicians of Idaho, Montana, eastern Washington, Oregon and British Columbia an enormous number of these cases could be collected."

Since that time numerous case reports and review articles, such as the one by Barnett[3] in 1937, have been published on this subject in this country, and similar cases have been described in Australia and in South Africa.

Up to 1938, however, this disease was thought to be limited to the northwestern United States and Canada, the natural habitat of the Rocky Mountain wood tick (Dermacentor andersoni Stiles), which had been found to be the causative agent in all cases in which the parasite had been examined and identified. In 1938 Gibbes[4] reported a case of tick paralysis in South Carolina, and subsequently 2 cases were described in Georgia, 1 in 1938 by Robinow and Carroll[5] and 1 in 1940 by Mulherin.[6] All 3 cases were due to the bite of an American dog tick (Dermacentor variabilis Say). Mulherin, furthermore, recorded the amazing fact that "the South Georgia Negroes are so familiar with this syndrome that whenever their children or domestic animals display these symptoms they search at once for ticks on the bodies of those affected."

The case to be presented is, as far as we know, the first to be reported in the northeastern United States.

From the Pediatric Department, New York Post-Graduate Medical School and Hospital, Columbia University.

1. Todd, J. L.: Tick Paralysis, J. Parasitol. **1**: 55 (Dec.) 1914.
2. McCornack, P. D.: Paralysis in Children Due to the Bite of Wood Ticks, J. A. M. A. **77**: 260 (July 23) 1921.
3. Barnett, E. J.: Wood Tick Paralysis in Children, J. A. M. A. **109**: 846 (Sept. 11) 1937.
4. Gibbes, J. H.: Tick Paralysis in South Carolina, J. A. M. A. **111**: 1008 (Sept. 10) 1938.
5. Robinow, Meinhard, and Carroll, T. B.: Tick Paralysis Due to the Bite of the American Dog Tick: Report of a Case Observed in Georgia, J. A. M. A. **111**: 1093 (Sept. 17) 1938.
6. Mulherin: Ataxia Due to American Dog Tick, J. Pediat. **16**: 86-88 (Jan.) 1940.

REPORT OF CASE

A white girl aged 3 years was admitted to the pediatric service of the New York Post-Graduate Hospital on Aug. 2, 1942 because of inability to walk or stand of three days' duration. Although a resident of New York City, the patient had for a few days been in Huntington, Long Island, a suburb some 40 miles from the city. Seven days prior to admission an "insect," not better described, had been found behind the child's right ear. The insect was apparently deeply embedded in the skin, for some difficulty was encountered in its removal.

The child remained in perfect health until three days before admission, at which time it was noticed that she appeared to be quite tired and that she refused to walk or play. On awakening the following morning she was unable to walk or stand. There was no apparent weakness of the legs, but it was impossible for the patient to maintain proper balance. All these symptoms disappeared in a few hours and the child was again able to resume her play and maintain her balance in walking for the remainder of that day. On awakening on August 2 she again presented the symptoms which have already been mentioned. These persisted and became progressively worse.

On admission the patient did not appear acutely ill. Her rectal temperature was 98.6 F. Her gait was definitely ataxic. There were no obvious palsies. No deep reflexes could be elicited in the arms or legs. The abdominal reflexes were present and active. There was a doubtful Babinski on the right side. There was no nuchal rigidity. Kernig and neck Brudzinski signs were negative. The pupils were equal and reacted normally to light. The fundi were normal. The rest of the physical examination was entirely negative.

A diagnostic spinal tap was performed at this time and 15 cc. of a crystal clear fluid was obtained under an initial pressure of 240 mm. of water. The pressure rose to 360 mm. of water on compression of the right and left jugular veins, rapidly returning to normal on the release of this pressure. Examination of the fluid thus obtained showed the presence of 10 white cells per cubic millimeter. The cells were all lymphocytes. Protein was 48.1 mg., sugar 54 mg. and lactic acid 18.9 mg. per hundred cubic centimeters. A smear and culture of the spinal fluid were negative, as was the spinal Wassermann reaction.

A complete blood count, taken shortly after admission, showed 4,160,000 red blood cells, 11.4 Gm. of hemoglobin and 5,500 white cells, the differential white count being 53 neutrophils, 45 lymphocytes and 2 monocytes. The blood Wassermann reaction and urinalysis were negative. The erythrocyte sedimentation rate was 5 mm. per hour.

In the course of a further work-up, two blood lead determinations were negative. An x-ray film of the wrists was also taken but failed to demonstrate the presence of a definite lead line.

The subsequent course of the illness in the hospital was characterized by a great variability in the previously described symptoms. While the temperature was persistently normal throughout the hospital stay, the degree of ataxia showed pronounced variation from day to day and even from hour to hour. Sometimes the patient was able to walk fairly well with only moderate swaying and could stand with her eyes closed, but at other times there was such a high degree of ataxia as to render standing or walking impossible. At these times the Romberg sign was positive. No paralysis ever appeared, however, and after six days the child did not appear to be any worse than on admission.

On August 9 one of the nurses found a large yellow insect in the patient's occipital region while combing the child's hair. The insect was removed without too much difficulty by simple traction and was subsequently sent to the National Institute of Health of the United States Public Health Service in Bethesda, Md. Dr. Norman H. Topping of that institution identified this insect as a partially engorged pregnant female Dermacentor variabilis (Say), dead on arrival.

The disappearance of the patient's symptoms after the removal of the tick was most dramatic, improvement being evident within a few hours. Forty-eight hours after the removal of the tick, the patient was able to sit and stand spontaneously and was able to walk without assistance and without noticeable ataxia. All deep reflexes on the left side were present and normal at this time. There was a positive but hypoactive knee jerk on the right side.

On August 13 the patient was discharged, having completely recovered from her illness.

COMMENT

The case just presented bears a striking resemblance to the cases described in the literature in the suddenness of the onset, the predominance of the ataxia early in the course of the disease, the negativity of the spinal fluid and the rapid recovery following the removal of the tick. A decided difference is noted, however, in the course of the disease in our case. All the authors stressed the fact that if the tick is not promptly removed the initial ataxia will soon give way to a rapidly progressing ascending flaccid paralysis with the early appearance of respiratory difficulty and ensuing death. In this case, although the tick was not found for ten days after the onset of the illness, there was no increase in the severity of the condition after the first twenty-four hours.

As all the cases on record with late removal of the parasite were due to the bite of the Rocky Mountain wood tick, this divergence in the clinical course makes one wonder as to whether the syndrome caused by the bite of the dog tick is one of milder clinical severity.

Tick paralysis is frequently mistaken for poliomyelitis and peripheral neuritis. Therefore, both of these syndromes must be considered in the differential diagnosis.

The predominance of the ataxia in the early symptomatology, the symmetrical distribution of the paralysis, the absence of a febrile period, the normal spinal fluid will permit an easy differentiation from poliomyelitis with its early flaccid paralysis, its segmental, irregular distribution and the cellular increase in the spinal fluid.

Peripheral neuritis is more difficult to differentiate from tick paralysis. Ataxia is frequently a prominent symptom in both conditions, and in both the paralysis is usually symmetrical. The spinal fluid, negative in the neuritis due to toxic agents, is also frequently negative for a long period (two weeks or more) in infectious polyneuritis (Guillain-Barre syndrome). The presence of the albuminocytologic dissociation characteristic of the latter syndrome cannot therefore be relied on for an early diagnosis.

In all instances the finding of the tick on the patient's body and the rapid disappearance of symptoms after its removal will definitely establish the diagnosis.

Little is known of the pathogenesis of tick paralysis. Most of the clinical and experimental evidence points to the production by the tick of a neurotropic poison and excludes the possibility of an infection. Regendanz and Reichenow,[7] in the only successful experimental reproduction of the syndrome on record, showed that it was possible to obtain an ascending motor paralysis in various laboratory animals by the injection of an extract of the eggs of Rhipicephalus sanguineus (the tropical dog tick). The dose of venom necessary to cause the paralysis or death of the animals was in these experiments directly proportional to the size of the animal itself, a fact which might perhaps explain the greater frequency of the syndrome in children.

While these interesting findings give us an insight into the possible pathogenesis of this disease, no explanation is forthcoming as to why tick paralysis occurs only rarely even though tick bites are of frequent occurrence. Dog ticks are extremely common in Long Island during the summer months and therefore physicians in this section should always keep tick paralysis in mind in any person who develops an afebrile flaccid paralysis.

7. Regendanz, P. V., and Reichenow, E.: Ueber Zeckengift und Zeckenparalyse, Arch. f. Schiffs- u. Tropen-Hyg. **35**: 273 (May) 1931.

CONCLUSIONS

The importance of an early diagnosis in cases of tick paralysis has been made clear in the preceding discussion.

The demonstration of the American dog tick as the etiologic agent in 4 cases of tick paralysis has made widespread knowledge and recognition of this syndrome most essential.

With the realization that Dermacentor variabilis Say is commonly found throughout the eastern part of the United States and that although usually found on the dog, there are numerous other known hosts,[8] it is evident that especially in rural districts tick paralysis should always be considered among the diagnostic possibilities in the presence of an ataxia or of an ascending flaccid paralysis of sudden onset.

5 East Eighty-Fourth Street.

NEUROCIRCULATORY ASTHENIA

Major Louis F. Bishop Jr.
Medical Corps, Army of the United States, and
First Lieutenant Robert W. Kimbro
Medical Corps, Army of the United States

The diagnosis of neurocirculatory asthenia may often be difficult to detect in the routine examination of candidates for induction into the United States Army. It is not until the physical and emotional strain of war that an individual with neurocirculatory asthenia becomes incapacitated and finally through pensions and invalidism becomes a permanent financial burden to the Army.[1] These facts are illustrated by the following report.

REPORT OF CASE

History.—W. L., a private aged 45, was inducted into the Army in October 1942. Soon after this he reported on sick call and was admitted to the hospital with the following complaints: "pain in heart, shortness of breath, and heart skips beats." He stated that while at home he worked as a farmer, carrying out his usual duties without difficulty. At times he had some shortness of breath with exertion. It was discovered that he had been discharged from the Army at the time of the last war and had with him a Certificate of Disability for Discharge which he received Nov. 12, 1918 at Camp Travis, Texas, twenty-four years ago. This Certificate of Disability for Discharge stated: "W. L. is hereby discharged from military service of the United States by reason of Neurocirculatory Asthenia, pulse standing 144, lying 92, after exercise, 180, two minutes later, 120."

Physical Examination.—General physical examination in 1942 was negative. The blood pressure was 118 systolic, 80 diastolic. The pulse rate was 130 standing and 90 sitting, after exercise 156, and after two minutes rest following this exercise 120. The palms of the hands were moist and excessive axillary perspiration was noted. There was a coarse tremor of the fingers. The apex of the heart was diffuse at the fourth interspace in the midclavicular line. There were no murmurs.

The electrocardiogram was within normal limits. The heart was of normal size and shape. The aorta was moderately widened.

The diagnosis was neurocirculatory asthenia.

COMMENT

This case illustrates that there is no specific treatment for this clinical syndrome and that the return of this soldier to civil life after the last war did not in any way change his condition, his symptoms in this war paralleling exactly those he had in the last war. From his history it was ascertained that this man could make a fair adjustment to his life as a farmer but not as a soldier. As far as we know, this is the only example of a person with this condition who has been discharged from the same army in two wars.

8. Cooley, R. A.: Bull. 268, Montana Experiment Station, in November 1932, Bozeman, Mont.

From the Medical Service, Station Hospital, San Antonio Aviation Cadet Center, San Antonio, Texas.

Released for publication by the War Department Manuscript Board, which assumes no responsibility, other than censorship, for the contents of this article.

1. Oppenheimer, B. S.: Neurocirculatory Asthenia and Related Problems in Military Medicine, Bull. New York Acad. Med. **18**: 367 (June) 1942.

Council on Physical Therapy

The Council on Physical Therapy has authorized publication of the following report. Howard A. Carter, Secretary.

RUBBERLESS RESPIRATOR COLLAR ACCEPTABLE

Manufacturer: R. L. Slater, 30 North La Salle, Street, Chicago.

The Rubberless Respirator Collar is designed to fit all standard type respirators for use as the patient's neck seal to retain air pressures necessary for respirator operation. The development of the device is said to have come about as a result of research to discover a substitute for sponge rubber collars. Difficulty in obtaining sponge rubber collars is being encountered, and it is said that many respirators now in use are in need of collar replacement.

The device consists of a small wire coil spring (plated to prevent rusting) with ends soldered together to form a ring and covered by a soft closely woven fabric lined with an air tight plastic material. The lined fabric extends to the padded outer section of the collar, forming an air resisting surface with the spring action serving as a draw string around the neck. The padded section fits under the respirator metal collar clamp, permitting it to be firmly fastened to the respirator. As the result of the spring action the collar is less difficult to put on and take off than the sponge rubber collar.

The manufacturer asserts that the materials used in the construction of the collar are far more durable than sponge rubber. Air and sunlight have no apparent ill effects on the lasting qualities. The device can be easily washed and dried.

Rubberless Respirator Collar.

According to the manufacturer, the collars have been tested on respirators in use at several widely recognized institutions. Results of all these tests are said to be satisfactory.

In the Council's investigations the respirator collar was found to be installed on the respirator with even greater ease than the sponge rubber collar for which it is a substitute. The hole is readily made large enough to admit the head of an adult or a small child with less difficulty than is true of the rubber collar. Some little difficulty was encountered in getting a close enough fit in the case of a very small child. But by some manipulation this difficulty was overcome. On the whole, it was found that these collars are not only a satisfactory substitute for the rubber ones but may be superior.

The Council voted to accept the Rubberless Respirator Collars for inclusion in its list of accepted devices.

AN APPRECIATION

The Council on Physical Therapy desires to take this opportunity to express its feelings of gratitude and appreciation of the services of the following consultants, whose assistance in carrying out the work of the Council has been given so freely during the past year:

Drs. Charles Bahn, Walter M. Boothby, Milton B. Cohen, Hart Fisher, John S. Hibben, K. K. Jones, S. L. Osborne, Lauriston Taylor, Ralph Waters and W. F. Wells.

Audiometers and Hearing Aids: Drs. C. C. Bunch (deceased), George M. Coates, E. P. Fowler, W. E. Grove, Dean Lierle, Isaac Jones, Walter Hughson, Douglas Macfarlan, C. Stewart Nash, Horace Newhart, Paul Sabine, B. R. Shurly and W. P. Wherry (deceased).

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Artificial Limbs: Drs. S. Perry Rogers, Paul Steele and Philip Wilson and Messrs. McCarthy Hanger Sr., W. E. Isle, J. B. Korrady, Joseph Spievak and David E. Stolpe.

MEDICAL LICENSURE STATISTICS FOR 1942

FORTY-FIRST ANNUAL PRESENTATION OF LICENSURE STATISTICS BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

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STATE BOARDS OF MEDICAL EXAMINERS

Statistical compilations regarding medical licensure are presented annually in the State Board Number of THE JOURNAL. In the following pages will be found the report for the year 1942, which constitutes the forty-first annual presentation. Data are included regarding (*a*) medical examining and licensing boards of the several states, the District of Columbia, the territories and possessions of the United States, (*b*) examining boards in the medical specialties, (*c*) boards of examiners in the basic sciences and (*d*) the National Board of Medical Examiners.

These computations are based on official records received throughout the year from the medical licensing boards of all the states, Alaska, Hawaii and the Virgin Islands, the homeopathic licensing boards of Connecticut, Delaware and Maryland, the seventeen boards of examiners in the basic sciences in operation last year, the fifteen approved examining boards in the medical specialties and the National Board of Medical Examiners. The homeopathic and eclectic examining boards in Arkansas and the homeopathic board in Louisiana did not license any one during the year.

The cooperation of the officers of the foregoing boards in making possible the vast amount of reliable information presented in the following pages is gratefully acknowledged. The Council and THE JOURNAL express their appreciation to those who have supplied these data.

From 1926 to 1938 the credentials presented by physicians from countries other than the United States and Canada were verified by official correspondence with the medical school directly or through the diplomatic service. For several years the Council has been unable to render this service, and on the licensing boards of the various states now rests the responsibility of evaluating the credentials presented by applicants claiming graduation from schools outside the United States. Later in this presentation statistics have been computed separately, recording physicians examined on the basis of certificates obtained in countries other than the United States and Canada.

The tables referring to medical licensing boards include figures regarding the number of candidates examined for medical licensure in 1942, the number licensed and the number added to the profession. The state boards are discussed first, followed by the special examining boards, the basic science boards and the National Board of Medical Examiners.

Because of the restrictions on paper, it has been necessary to restrict publication of this material in THE JOURNAL. The complete report with omitted tables will appear in the reprint.

TABLE 1.—*Licenses Issued, 1942*

	On the Basis of		
	Examination	Reciprocity and Endorsement	Total
Alabama	25	67	92
Arizona	9	16	25
Arkansas	61	19	80
California	457	283	740
Colorado	68	16	84
Connecticut	66	59	125
Delaware	7	2	9
District of Columbia	27	68	95
Florida	110	..	110
Georgia	96	19	115
Idaho	12	1	13
Illinois	416	93	509
Indiana	128	82	210
Iowa	64	23	87
Kansas	99	22	121
Kentucky	88	39	127
Louisiana	309	26	335
Maine	42	22	64
Maryland	165	69	234
Massachusetts	201	111	312
Michigan	185	116	301
Minnesota	199	27	226
Mississippi	43	32	75
Missouri	182	68	250
Montana	7	14	21
Nebraska	77	7	84
Nevada	2	17	19
New Hampshire	3	28	31
New Jersey	110	128	238
New Mexico	...	8	8
New York	1,071	259	1,330
North Carolina	77	59	136
North Dakota	6	9	15
Ohio	271	99	370
Oklahoma	51	33	84
Oregon	45	31	76
Pennsylvania	454	62	516
Rhode Island	31	6	37
South Carolina	46	9	55
South Dakota	5	5	10
Tennessee	187	45	232
Texas	193	106	299
Utah	15	15	30
Vermont	18	13	31
Virginia	145	66	211
Washington	60	49	109
West Virginia	27	38	65
Wisconsin	124	46	170
Wyoming	...	16	16
Alaska, Hawaii and Virgin Islands	15	10	25
Totals	6,099	2,458	8,557

LICENSES ISSUED

During the year 1942, 8,557 licenses to practice medicine and surgery were issued by the medical examining boards of the forty-eight states, the District of

(*Continued on page 92*)

TABLE 2.—CANDIDATES EXAMINED BY

Marginal Number	SCHOOL	1 Alabama P	F	2 Arizona P	F	3 Arkansas P	F	4 California P	F	5 Colorado P	F	6 Connecticut P	F	7 Delaware P	F	8 Dist. Columbia P	F	9 Florida P	F	10 Georgia P	F	11 Idaho P	F	12 Illinois P	F	13 Indiana P	F	14 Iowa P	F	15 Kansas P	F	16 Kentucky P	F	17 Louisiana P	F	18 Maine P	F	19 Maryland P	F	20 Massachusetts P	F	21 Michigan P	F	22 Minnesota P	F	Marginal Number
	ARKANSAS																																													
1	University of Arkansas School of Medicine					61	0											3	0																			1	0							1
	CALIFORNIA																																													
2	College of Medical Evangelists							37	4	3	0							2	0							1	0											2	0					2	0	
3	Stanford University School of Medicine							54	1																									1	0					1	1	3	0	
4	University of California Medical School							99	0															1	0													1	0	1	0	1	0	
5	University of Southern California Sch. of Med.			1	0			48	0													1	0																					5
	COLORADO																																												
6	University of Colorado School of Medicine							1	0	46	0											1	0	1	0											2	0							1	0	
	CONNECTICUT																																												
7	Yale University School of Medicine							3	0			3	0					2	0																	2	0			1	0			3	0	1
	DISTRICT OF COLUMBIA																																												
8	George Washington University School of Med.							6	1							12	0	1	0	1	0	1	0			1	0			1	0	1	0	4	0					1	0	4	
9	Georgetown University College of Medicine							1	0			2	2			3	0	1	0																			5	1					9
10	Howard University College of Medicine	1	0																	1	0			4	1							1	0					5	0					10
	GEORGIA																																												
11	Emory University School of Medicine	1	0															12	0	4	2	0																		1	0				11
12	University of Georgia School of Medicine																	4	0	4	2	0																							12
	ILLINOIS																																												
13	Loyola University School of Medicine							4	0									1	0					44	1	3	0							2	0					0	1	3	0	1	0	13
14	Northwestern University Medical School							13	1	4	0	2	0					1	0	1	0	2	0	75	1	2	0			4	0			2	0					1	0	6	0	11	0	14
15	University of Chicago, The School of Medicine							4	0	1	0							2	0	1	0			18	0	2	0					1	0	2	0					2	0	4	0			15
16	University of Illinois College of Medicine							11	0									1	0					121	0									1	0							1	0	4	0	16
	INDIANA																																												
17	Indiana University School of Medicine															1	0	1	0					2	0	105	0																	3	0	17
	IOWA																																												
18	State University of Iowa College of Medicine			1	0			2	0									1	0			0	1	3	0	1	0	27	0															18
	KANSAS																																												
19	University of Kansas School of Medicine							2	0									1	0											81	0											1	0	1	0	19
	KENTUCKY																																												
20	University of Louisville School of Medicine	2	0					1	0									2	1									1	0			80	0	1	0									1	0	20
	LOUISIANA																																												
21	Louisiana State University School of Medicine							2	0															1	0					1	0			73	0									2	21
22	Tulane University of Louisiana School of Med.	11	0					2	0									10	0											1	0			78	0							3	0	22	1
	MARYLAND																																												
23	Johns Hopkins University School of Medicine	1	0					4	0			2	0			1	0	5	1					1	0									1	0	3	0	58	0			1	0	4	0	23
24	University of Maryland School of Medicine and College of Physicians and Surgeons							1	0			2	1					2	0			1	0															65	1	2	0					24
	MASSACHUSETTS																																												
25	Boston University School of Medicine							1	0			1	0																							2	0			1	0			25
26	Harvard Medical School	3	0	1	0			5	0	1	0	4	0					3	0	1	0			3	0											4	1	2	0	17	0			4	0	26
27	Tufts College Medical School																	1	0			1	0													5	0			6	0	1	0			27
	MICHIGAN																																												
28	University of Michigan Medical School							3	0															3	0									1	0					1	0	88	0	2	0	28
29	Wayne University College of Medicine							1	0									1	0	1	0																					66	0			29
	MINNESOTA																																												
30	University of Minnesota Medical School							5	0									1	0	1	0					3	0							1	0							1	0	100	1	30
	MISSOURI																																												
31	St. Louis University School of Medicine							9	1			2	0											1	0																	1	0	2	0	31
32	Washington University School of Medicine	1	0					17	0			1	0					2	0					2	0																			1	0	2	0	32
	NEBRASKA																																												
33	Creighton University School of Medicine			1	0			16	0															2	0			9	0	4	0									1	0	1	0	1	0	33
34	University of Nebraska College of Medicine							5	1																			2	0	3	0			1	0					1	0			2	0	34
	NEW YORK																																												
35	Albany Medical College																																												35
36	Columbia University Coll. of Phys. and Surgs.			1	0			1	0			5	1			1	0	1	0	1	0			3	0											1	1			4	0			2	0	36
37	Cornell University Medical College									1	0	2	1					1	0	2	0			2	0											1	0			1	0	1	0	1	0	37
38	Long Island College of Medicine	5	0									3	0					3	0																	1	0							1	0	38
39	New York Medical College, Flower and Fifth Avenue Hospitals							1	0									1	0																											39
40	New York University College of Medicine							1	0									0	1											1	0					1	0			1	0					40
41	Syracuse University College of Medicine									1	1							1	0					3	0																					41
42	University of Buffalo School of Medicine																																													42
43	Univ. of Rochester Sch. of Med. and Dentistry			1	0			1	0			3	0																					1	0					2	1			3	0	43
	NORTH CAROLINA																																												
44	Duke University School of Medicine	1	0															4	0																											44
	OHIO																																												
45	Ohio State University College of Medicine																																												45
46	University of Cincinnati College of Medicine							2	0									1	0																									3	0	46
47	Western Reserve University School of Medicine							1	0			1	0					2	0																							1	0			1	0	47
	OKLAHOMA																																												
48	University of Oklahoma School of Medicine							1	0																																					48
	OREGON																																												
49	University of Oregon Medical School							12	0													3	0			1	0													1	0	1	0	49
	PENNSYLVANIA																																												
50	Hahnemann Med. Coll. and Hosp. of Phila							1	1	1	0	3	0	2	0			2	1																			5	0	3	4	1	0			50
51	Jefferson Medical College of Philadelphia	1	0					1	0					1	0			4	0					1	0	2	0							1	0	2	0			2	0	3	0	3	0	51
52	Temple University School of Medicine							4	0			2	0	1	0	1	0	2	0											1	0			1	0					1	1	2	0	3	0	52
53	University of Pennsylvania School of Medicine							2	0			2	0	2	0	2	0	4	1													1	0			3	0	1	0			3	0	4	0	53
54	University of Pittsburgh School of Medicine	4	0															2	1					1	0																					54
55	Woman's Medical College of Pennsylvania							2	0					1	0			1	0					2	0																	1	0			55
	SOUTH CAROLINA																																												
56	Medical College of the State of South Carolina							1	0									2	0																											56
	TENNESSEE																																												
57	Meharry Medical College																	2	0	1	0			1	0																					57
58	University of Tennessee College of Medicine							4	0									4	1													1	0													58
59	Vanderbilt University School of Medicine	1	0															4	0															1	0							1	0			59
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	

P—Passed; F—Failed.

| Marginal Number | Mississippi | | Missouri | | Montana | | Nebraska | | Nevada | | New Hampshire | | New Jersey | | New Mexico | | New York | | North Carolina | | North Dakota | | Ohio | | Oklahoma | | Oregon | | Pennsylvania | | Rhode Island | | South Carolina | | South Dakota | | Tennessee | | Texas | | Utah | | Vermont | | Virginia | | Washington | | West Virginia | | Wisconsin | | Wyoming | | Alaska, Hawaii | | Totals | Examined—Passed | Examined—Failed | Percentage—Failed | No. Boards Examined by | Marginal Number |
|---|---|---

TABLE 2.—CANDIDATES EXAMINED BY

Marginal Number	SCHOOL	1 Alabama P	F	2 Arizona P	F	3 Arkansas P	F	4 California P	F	5 Colorado P	F	6 Connecticut P	F	7 Delaware P	F	8 Dist. Columbia P	F	9 Florida P	F	10 Georgia P	F	11 Idaho P	F	12 Illinois P	F	13 Indiana P	F	14 Iowa P	F	15 Kansas P	F	16 Kentucky P	F	17 Louisiana P	F	18 Maine P	F	19 Maryland P	F	20 Massachusetts P	F	21 Michigan P	F	22 Minnesota P	F	Marginal Number
	TEXAS																																													
60	Baylor University College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	0	60
61	University of Texas Medical Branch	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	61
	VERMONT																																												
62	University of Vermont College of Medicine	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	62
	VIRGINIA																																												
63	Medical College of Virginia	..	..	..	..	..	..	1	0	..	..	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	0	63
64	University of Virginia Department of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	64
	WISCONSIN																																												
65	Marquette University School of Medicine	..	..	..	..	..	..	5	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	2	0	5	0	65
66	University of Wisconsin Medical School	..	..	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	1	0	..	..	1	0	..	..	..	..	..	..	1	0	1	0	2	0	66
	CANADA																																												
67	Dalhousie University Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	67
68	Laval University Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	68
69	McGill University Faculty of Medicine	..	..	..	..	..	..	2	0	..	..	3	1	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	2	0	..	..	1	0	69
70	Queen's University Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	70
71	University of Alberta Faculty of Medicine	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	71
72	University of Manitoba Faculty of Medicine	..	..	..	..	..	..	2	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	72
73	University of Montreal Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	73
74	University of Toronto Faculty of Medicine	..	..	..	..	..	..	2	0	..	..	2	1	..	..	1	0	..	..	..	..	..	..	5	0	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	2	0	..	..	74
75	University of Western Ontario Medical School	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	75
76	Foreign Medical Faculties	..	..	..	..	..	..	45	6	1	0	11	19	..	..	..	..	..	..	1	0	..	..	33	40	3	0	3	0	..	..	..	..	..	..	15	4	14	9	25	40	2	0	..	..	76
77	Extinct Medical Schools	2	0	2	0	..	..	7	0	1	0	..	..	..	..	..	..	6	1	..	..	2	0	33	1	1	0	0	1	1	0	..	..	1	0	1	0	1	0	2	1	3	0	9	0	77
78	Unapproved Schools and Undergraduates	..	..	..	..	..	..	..	..	9	3	0	3	..	..	2	0	..	..	..	..	..	..	51	3	4	0	..	..	..	..	..	..	..	..	..	..	..	..	118	202	..	..	..	..	78
79	**Totals**	34		9		61		475		71		90		7		27		118		96		13		469		128		45		99		84		175		48		176		452		196		200		79
80	Totals—Examined—Passed	34		9		61		459		68		59		7		27		110		96		12		421		128		44		99		84		175		42		165		201		196		199		80
81	Totals—Examined—Failed	0		0		0		16		3		31		0		0		8		0		1		48		0		1		0		0		0		6		11		251		0		1		81
82	Percentage Failed	0.0		0.0		0.0		3.4		4.2		34.4		0.0		0.0		6.8		0.0		7.7		10.2		0.0		2.2		0.0		0.0		0.0		12.5		6.2		55.4		0.0		0.5		82
		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		

P—Passed; F—Failed.

(Continued from page 89)

Columbia, Alaska, Hawaii and the Virgin Islands. Of the 8,557 licenses issued, 6,099 were issued after examination and 2,458 by reciprocity and endorsement of other state licenses or the certificate of the National Board of Medical Examiners.

In twenty-two states, the District of Columbia, Alaska, Hawaii and Puerto Rico the internship is a requisite for practice, but a physician is permitted to take the examination on completing the medical course in most of these states, and, if successful, his license is withheld until the completion of the internship. This practice is followed by recent graduates. Licenses are also withheld for proof of citizenship and minor technicalities. In some states also the licenses of physicians taking examinations scheduled in December are dated and issued early in the following year. Tabulations in table 1, therefore, include many who were examined in 1941 and even a few in previous years. Consequently, figures in this table will not correspond with those hereinafter given, which deal entirely with physicians examined for licensure within the year 1942.

Four states issued licenses to more than 500 physicians, namely New York 1,330, California 740, Pennsylvania 516, Illinois 509. Twenty-five states, Alaska, Hawaii and the Virgin Islands licensed fewer than 100 physicians. None were licensed by examination in New Mexico, Wyoming or the Virgin Islands. The fewest number, 8, were licensed in New Mexico.

An interesting point to observe is that in some states the number registered without examination far exceeded those required to write an examination. On the other hand, in many states the reverse was the case. The latter is particularly significant in New York, where 1,071 took examinations and 259 received licenses by endorsement of their credentials. Louisiana issued only 26 of its 335 on the basis of credentials. The state of Florida grants licenses only on the basis of examinations. Massachusetts, Rhode Island and Hawaii have no reciprocity agreements but endorse diplomates of the National Board of Medical Examiners.

Totals for seven previous years and 1942 are shown for comparison in table 3. Since 1937, when the greatest number of licenses were issued, fewer have received licenses annually. In 1942 the number registered decreased 255. This reduction can probably be charged in part to the fact that physicians have entered the armed forces immediately after graduation, although ten states granted more licenses than in previous years.

TABLE 3.—*Licenses Issued, 1935-1942*

	Examination	Reciprocity and Endorsement	Total
1935	5,725	2,194	7,919
1936	6,275	2,772	9,047
1937	6,629	3,204	9,833
1938	6,557	2,956	9,513
1939	6,400	2,872	9,272
1940	6,289	2,865	9,154
1941	6,053	2,759	8,812
1942	6,099	2,458	8,557
Totals	50,027	22,080	72,107

Notably, Louisiana registered 335 physicians in 1942 as compared with 157 in 1941. The intern year as a requirement for licensure was discontinued in Louisiana in 1942, and those who normally would have been licensed in 1943 obtained the certificate last year. The University of Texas Medical Branch accelerated its senior year in 1942, this class receiving their degrees in December 1942. There was no notable change in the number of physicians licensed in Texas. The University of Wisconsin Medical School dropped the requirement of a hospital internship for the duration of the war and awarded degrees in December 1942,

Marginal Number	Mississippi P	Mississippi F	Missouri P	Missouri F	Montana P	Montana F	Nebraska P	Nebraska F	Nevada P	Nevada F	New Hampshire P	New Hampshire F	New Jersey P	New Jersey F	New Mexico P	New Mexico F	New York P	New York F	North Carolina P	North Carolina F	North Dakota P	North Dakota F	Ohio P	Ohio F	Oklahoma P	Oklahoma F	Oregon P	Oregon F	Pennsylvania P	Pennsylvania F	Rhode Island P	Rhode Island F	South Carolina P	South Carolina F	South Dakota P	South Dakota F	Tennessee P	Tennessee F	Texas P	Texas F	Utah P	Utah F	Vermont P	Vermont F	Virginia P	Virginia F	Washington P	Washington F	West Virginia P	West Virginia F	Wisconsin P	Wisconsin F	Wyoming P	Wyoming F	Alaska, Hawaii P	Alaska, Hawaii F	Totals	Examined—Passed	Examined—Failed	Percentage—Failed	No. Boards Examined by	Marginal Number
60	9	0	1	0																																			70	1																			77	76	1	1.3	4	60
61																																							180	1																			183	182	1	0.5	3	61
62																	3	0											1	0													18	0																	23	23	0	0.0	4	62
63	2	0																	4	0																																									73	73	0	0.0	7	63
64																	1	0	1	0																																									64	64	0	0.0	5	64
65			2	0	1	0											5	0					3	0					2	0	1	0							1	0							2	0											66	66	0	0.0	14	65
66			1	0																			3	0		2	0	1	0											2	0					1	0	1	0			42	0			1	0	63	63	0	0.0	16	66
67												1	0				6	0											1	0	1	0																													9	9	0	0.0	4	67
68										0	1						3	5													1	0																													10	4	6	60.0	3	68
69																	5	3											3	0							1	0											1	0	1	0							25	21	4	16.0	11	69
70																	3	2																																										8	5	3	37.5	4	70
71																	0	1													1	0																					1	0							5	4	1	20.0	5	71
72																					1	0																																							4	4	0	0.0	3	72
73											0	2																			1	0																													5	2	3	60.0	4	73
74			2	0													3	0					1	0					1	0																							1	0							22	21	1	4.5	11	74
75																							1	0					1	0																													5	5	0	0.0	5	75
76			2	0	1	1	1	0					26	10			670	593					3	4					16	9							1	0	1	0	1	3			1	0	10	1	3	0					1	1	1,630	890	740	45.4	25	76
77			3	1	1	0							1	0			6	0					1	1	1	0	2	0	3	0	1	0									1	0	4	0			2	0	2	0			5	0			1	0	112	106	6	5.4	31	77
78	1	2											9	0																									17	8											5	1			0	1	440	217	223	50.7	12	78
79	45	183		8	79		1	6	120		0	1,731		77		7	280		54		45		477		35		46		5	190		304		14		25		146		60		27		125		0		17	7,180	.....	.....	....	..	79
80	43	182		7	77		1	3	110		0	1,071		77		6	274		54		45		456		35		46		5	190		289		14		24		145		60		27		124		0		15	.....	6,076	.....	....	..	80
81	2	1		1	2		0	3	10		0	660		0		1	6		0		0		21		0		0		0	0		15		0		1		1		0		0		1		0		2	.....	.....	1,104	....	..	81
82	4.4	0.5		12.5	2.5		0.0	50.0	8.3		0.0	38.1		0.0		14.3	2.1		0.0		0.0		4.4		0.0		0.0		0.0	0.0		49.3		0.0		4.0		0.7		0.0		0.0		0.8		0.0		11.8	.....	.....	.....	15.4	..	82

permitting graduates of this school to secure licenses, but here again there was no definite increase in the licenses issued in that state. The number of licenses issued in New York increased 157, representing principally graduates of foreign faculties of medicine.

Licenses issued do not altogether represent individuals, since several have been licensed in more than one state during the year, nor does the total represent additions to the medical profession at large, since those licensed by reciprocity and endorsement, with the exception of the National Board of Medical Examiners, have previously been registered. Subsequent tables show how many secured licenses for the first time and represent the number added to the medical profession in the United States and its territories and possessions.

In eight years 72,107 medical licenses have been issued, 50,027 by examination and 22,080 by endorsement of credentials.

The medical licensing boards are arranging their examination schedules for the year 1943 to correspond with dates of graduation of the medical schools operating on the accelerated plan in order that physicians may secure state licenses before entering military service. Wherever possible without too much lapse of time, the Procurement and Assignment Service will permit a physician to secure a state license before entering military service.

CANDIDATES EXAMINED BY MEDICAL EXAMINING BOARDS

Figures are included in table 2 referring to those examined for medical licensure by individual states, Alaska and Hawaii, indicating the number who passed or failed. Throughout the year 7,180 were examined, of whom 6,076 passed and 1,104 failed, representing sixty-five approved medical schools in the United States and nine of the medical schools of Canada, thirteen medical schools now extinct, ninety-nine faculties of medicine and three licensing corporations of other countries, five unapproved institutions and six colleges of osteopathy. Osteopaths who were granted the privilege to practice medicine, surgery or both by the medical examining boards are included in these statistics.

Osteopaths in other states who obtained the legal right to special practice by the osteopathic board are excluded from these statistics.

There were 4,905 graduates of approved medical schools in the United States examined, of whom 2.4 per cent failed; 93 graduates of approved Canadian schools, 19.4 per cent of whom failed; of 112 who graduated from medical schools now out of existence, 5.4 per cent failed; 1,630 graduates of faculties of medicine outside the United States and Canada, principally in Europe, with 45.4 per cent failures; and 440 from unapproved and osteopathic schools, of whom 50.8 per cent failed.

The 440 from unapproved and osteopathic schools represented 110 graduates of schools of osteopathy, of whom 60 passed and 50 (45.5 per cent) failed, and 328 graduates of unapproved schools, of whom 157 passed and 171 (52.1 per cent) failed. In addition, 2 undergraduates were examined in Mississippi and failed.

Graduates of schools of osteopathy were examined by the medical boards of eight states and the District of Columbia, namely Colorado, Connecticut, Indiana, Massachusetts, New Jersey, Oregon, Texas and Wisconsin, while graduates of unapproved medical schools were examined in Illinois, Massachusetts, Mississippi and Hawaii. Of the 110 osteopaths, 50 were examined in Massachusetts, 25 in Texas, 12 in Colorado, 9 in New Jersey and 6 in Wisconsin. Other states examined fewer than 5. Osteopaths in Colorado, Massachusetts, New Jersey and Texas were examined in medicine

and surgery, those in the District of Columbia, Oregon and Wisconsin only in surgery. In Indiana the licenses issued to osteopaths authorized the holders to practice surgery and obstetrics. Connecticut examined 1 in medicine and 2 in surgery.

Of the graduates of unapproved schools, Massachusetts examined 272 and Illinois 54. One candidate was also examined by the licensing boards in Mississippi and Hawaii. Mississippi also examined 2 undergraduates.

TABLE 4.—*Source of Candidates Examined, 1942*

Medical Schools	Number	Number Examined	Number Passed	Number Failed	Percentage Failed
Approved, in United States	65	4,905	4,788	117	2.4
Approved, in Canada	9	93	75	18	19.4
Extinct	13	112	106	6	5.4
Foreign	102	1,630	890	740	45.4
Unapproved Schools	11	440	217	223	50.8
Totals	200	7,180	6,076	1,104	15.4

The total number (7,180) does not represent individuals, since a candidate might take the examination in more than one state and would be counted in each state. This applies to those who pass or fail or those who fail and later in the year pass in one or more states, or pass in one or more states and later in the same year fail elsewhere. A candidate failing more than once in a given state within the year is counted as one failure.

The greatest number of graduates of any one school examined was 163, representing Northwestern University Medical School, who were examined in twenty-six states. Of these, 161 were successful and 1.2 per cent failed. In another instance 153 graduates of Hahnemann Medical College and Hospital of Philadelphia were examined in sixteen states. Twenty-eight graduates failed to pass the licensing examination, representing 18.3 per cent of those examined.

TABLE 5.—*Graduates of Medical Schools in Canada Examined for Licensure in the United States, 1942*

	Examined	Passed	Failed
California	7	7	0
Connecticut	9	6	3
District of Columbia	2	2	0
Florida	1	1	0
Illinois	8	7	1
Iowa	1	1	0
Maine	2	2	0
Massachusetts	4	4	0
Michigan	1	1	0
Minnesota	3	3	0
Missouri	2	2	0
New Hampshire	3	0	3
New Jersey	1	1	0
New York	31	20	11
North Dakota	1	1	0
Ohio	2	2	0
Pennsylvania	6	6	0
Rhode Island	4	4	0
Tennessee	1	1	0
Virginia	1	1	0
Washington	2	2	0
West Virginia	1	1	0
Totals	93	75	18

Twenty-eight schools in the United States had no failures before medical licensing boards, twenty-four less than 5 per cent, eleven between 5 and 10 per cent, and three more than 10 per cent. The number examined from many of the schools having a high percentage of failures is small compared with the annual output of graduates of these schools. This is accounted for by the fact that a good majority of their graduates take the examinations of the National Board of Medical Examiners. Table 10 includes figures and percentages of all examined during 1942, i. e. those who were examined by the National Board of Medical Examiners in their final examination as well as those passing state tests.

Graduates of Northwestern University Medical School and Harvard Medical School were examined in the greatest number of states—twenty-six. The University of Pennsylvania graduates were tested in twenty-four states, Jefferson Medical College in twenty-three states, Johns Hopkins and Temple University schools of medicine in twenty-two states respectively and the University of Chicago in twenty-one states. All other schools had their graduates examined in fewer than twenty states. The medical schools of the University of Georgia, New York Medical College, Buffalo, Baylor, Texas and Vermont had graduates examined in fewer than five states. No graduate of Albany Medical College took the state written examinations for medical licensure during the year.

Totals taken from this table are subdivided into five groups in table 4, namely approved medical schools in the United States and in Canada, schools no longer in existence, foreign faculties of medicine and unapproved institutions. Of the United States schools 2.4 per cent failed and of the extinct schools 5.4 per cent failed. Eighteen graduates of Canadian schools, or 19.4 per cent of the total examined, failed examinations in the United States. The greatest percentage of failures represented two groups—foreign faculties of medicine and unapproved schools. In these two groups 45.4 and 50.8 per cent, respectively, failed.

Three of the five homeopathic boards in existence, Connecticut, Delaware and Maryland, examined 11 candidates, all of whom passed. The homeopathic boards in Arkansas and Louisiana did not examine any one in 1942. The one eclectic board in existence, in Arkansas, did not examine a candidate.

Ninety-three graduates of nine approved medical schools in Canada were tested for medical licensure in the United States in 1942 in twenty-one states and the District of Columbia (table 5), of whom 75 passed and 18 failed. Twenty-five graduates of McGill University Faculty of Medicine and 22 of the University of Toronto Faculty of Medicine applied for licensure in eleven states, respectively, and in each instance 21 were successful. The highest percentage of failures (60) represented Laval University Faculty of Medicine, whose graduates were examined in three states, and the University of Montreal Faculty of Medicine in four states. Three Canadian schools had no failures before United States licensing boards. The state of New York examined 31 Canadian graduates. All other states testing graduates of the schools in Canada examined less than 10 and in the majority of states fewer than 5. Eleven were unsuccessful in the examination given by the New York board of medical examiners.

Graduates of medical schools of other countries were examined for licensure in twenty-four states and Hawaii. In 1942 also 440 graduates of unapproved schools were examined in eleven states and Hawaii.

Altogether in 1942 there were 7,180 candidates tested for medical licensure, of whom 6,076 passed and 1,104, or 15.4 per cent, failed.

Elsewhere are given figures referring to actual licentiates and additions to the medical profession.

GRADUATES OF 1940, 1941 AND 1942 EXAMINED FOR MEDICAL LICENSURE

In table 6 are presented figures recording graduates of 1940, 1941 and 1942 examined for medical licensure in 1942. Represented were 4,609 graduates of sixty-five approved medical schools in the United States, 48 graduates of nine approved medical schools in Canada, 191 recent graduates of medical schools outside the United States and Canada, and 320 graduates of unapproved schools. Altogether 5,168 graduates of the last three years were examined, of whom 4,876 passed and 292, or 5.7 per cent, failed. The number who passed and failed in each of these four groups are given in table 7.

Of the medical schools of the United States 1.9 per cent failed, while among the graduates of the Canadian schools 18.7 per cent failed, those holding foreign degrees 30.9 per cent and unapproved schools 42.5 per cent.

Thirty-seven schools in the United States had no failures among recent graduates applying for licensure, twenty-one schools had less than 5 per cent and eight more than 5 per cent and ranging to 16.7 per cent.

The greatest number examined by any one state was New York, 588, Pennsylvania examined 436, California 402, Illinois 369, Texas 294, Ohio 266 and Massachusetts 245.

TABLE 7.—*Source of Graduates of 1940, 1941 and 1942, Examined, 1942*

Medical Schools	Examined	Passed	Failed	Percentage Failed
Approved, in United States	4,609	4,521	88	1.9
Approved, in Canada	48	39	9	18.7
Foreign	191	132	59	30.9
Unapproved	320	184	136	42.5
Totals	5,168	4,876	292	5.7

More than 100 from each of fourteen schools were examined, the highest being 182 graduates of the University of Texas Medical Branch, who appeared before licensing boards in two states, 181 in Texas and 1 in Arizona. The senior class of the University of Texas under the accelerated curriculum was matriculated in March 1942 and completed the course in December. While the latter graduates were examined late last year, they did not receive their licenses until January 1943.

Only 12 of the recent graduates of the Yale University School of Medicine were examined last year, in seven states. Very few also of the recent graduates of the Boston University School of Medicine, Tufts College Medical School, the New York Medical College and Duke University School of Medicine applied for licensure by this method and none from Albany Medical College. The majority of the graduates of these schools with few examinees before state licensing boards obtained the certificate of the National Board of Medical Examiners and received state licenses to practice medicine by endorsement of this certificate.

The source of graduates of 1940, 1941 and 1942, respectively, examined for medical licensure last year, are subdivided by years in table 8, giving totals passed and failed for (*a*) approved medical schools in the United States, (*b*) approved medical schools in Canada, (*c*) medical schools now extinct, (*d*) foreign faculties of medicine and (*e*) unapproved schools. Of the graduates of 1940, 396 passed, while 1,350 graduates of 1941 and 3,130 who received their degrees in 1942 were successful. These totals together with percentages are again presented in table 9.

Of the total number of examinees for licensure in the United States in 1942, 72 per cent were graduates of 1942, 1941 and 1940. Of those graduates prior to 1940, 40.4 per cent failed, whereas only 5.7 per cent of the recent graduates of all schools failed.

TABLE 8.—*Source of Graduates of 1940, 1941 and 1942 Respectively, Examined for Medical Licensure, 1942*

Medical Schools	1940		1941		1942	
	Passed	Failed	Passed	Failed	Passed	Failed
Approved, in United States	285	16	1,160	44	3,000	26
Approved, in Canada	14	3	21	6	3	..
Extinct	16	..	54	..	7	0
Foreign	58	34	63	22	11	3
Unapproved Schools	23	25	52	55	109	56
Totals	396	80	1,350	127	3,130	85

CONSOLIDATED EXAMINATIONS

In 1942, 4,905 graduates of approved medical schools in the United States were examined by medical licensing boards, of whom 2.4 per cent failed. In the same period 972 graduates of approved medical schools in the United States appeared for Part III of the examination of the National Board of Medical Examiners, of whom 1.2 per cent failed. A comparison of the failures in each group revealed that in some instances schools having a high percentage of failures before licensing boards had few, if any, failures before the National Board of Medical Examiners. Individual school results for these two groups are presented in table 10. In these consolidated figures the percentage of failures of approved medical schools in the United States was 2.2.

Of the Canadian schools, 19.4 per cent failed state board tests and 16.4 per cent the combined tests. Very little comparison is evident in this group, since only 17 graduates of two Canadian schools were examined by the National Board. Only 51 graduates of foreign faculties of medicine were tested by the National Board, while 1,630 were examined by state licensing boards. The National Board does not admit to its examinations graduates of other than approved schools.

TABLE 9.—*Graduates of 1940, 1941 and 1942 Respectively, Examined, 1942*

Graduates of	Examined	Passed	Failed	Percentage Failed
1940	476	396	80	16.8
1941	1,477	1,350	127	8.6
1942	3,215	3,130	85	2.6
Totals	5,168	4,876	292	5.7

The total of all examined before medical licensing boards was 7,180, of whom 6,076 passed and 1,104 (15.4 per cent) failed. For both groups 8,233 were examined; 7,116 passed and 1,117 (13.6 per cent) failed. The total percentage of failures has been slightly reduced by including figures for the National Board of Medical Examiners, but materially so for certain schools. Twenty-four schools had no failures in either group. The highest percentage of failures for one school was 18.1 per cent, the failures of the majority of schools averaging less than 3 per cent.

TABLE 10.—*Consolidated Examinations—State Medical Examining Boards and the National Board of Medical Examiners, 1942*

School	Results by Medical Examining Board Tests		Part III Examination of National Board of Medical Examiners		Totals		
	P	F	P	F	P	F	%F
University of Arkansas	72	4	3	0	75	4	5.1
College of Medical Evangelists	59	4	53	2	112	6	5.1
Stanford University	63	2	4	0	67	2	2.9
University of California	103	0	..	..	103	0	0.0
University of Southern California	52	0	..	..	52	0	0.0
University of Colorado	56	0	5	0	61	0	0.0
Yale University	16	1	39	1	55	2	3.5
George Washington University	51	1	22	0	73	1	1.4
Georgetown University	39	5	40	1	79	6	7.1
Howard University	32	2	1	0	33	2	5.7
Emory University	60	0	1	0	61	0	0.0
University of Georgia	47	0	..	..	47	0	0.0
Loyola University	71	4	6	1	77	5	6.1
Northwestern University	161	2	21	0	182	2	1.1
University of Chicago	55	0	7	0	62	0	0.0
University of Illinois	150	0	4	0	154	0	0.0
Indiana University	115	0	..	..	115	0	0.0
State University of Iowa	35	1	20	0	55	1	1.8
University of Kansas	89	0	8	0	97	0	0.0
University of Louisville	97	1	2	0	99	1	1.0
Louisiana State University	85	1	1	0	86	1	1.1
Tulane University	129	0	7	0	136	0	0.0
Johns Hopkins University	97	2	10	0	107	2	1.8
University of Maryland	93	2	6	0	99	2	2.0
Boston University	6	0	36	0	42	0	0.0
Harvard Medical School	76	1	122	0	198	1	0.5
Tufts College Medical School	22	0	88	1	110	1	0.9
University of Michigan	105	0	3	0	108	0	0.0
Wayne University	71	0	..	..	71	0	0.0
University of Minnesota	121	1	8	0	129	1	0.8
St. Louis University	106	6	6	0	112	6	5.1
Washington University	111	1	5	0	116	1	0.9
Creighton University	62	2	9	0	71	2	2.7
University of Nebraska	82	5	1	0	83	5	5.7
Albany Medical College	0	0	35	0	35	0	0.0
Columbia University	60	3	25	0	85	3	3.4
Cornell University	51	1	21	0	72	1	1.4
Long Island College of Medicine	74	8	35	0	109	8	6.8
New York Medical College	8	1	65	3	73	4	5.2
New York University	89	3	25	0	114	3	2.6
Syracuse University	43	3	8	0	51	3	5.6
University of Buffalo	8	0	63	1	71	1	1.4
University of Rochester	40	4	15	0	55	4	6.8
Duke University	13	0	51	1	64	1	1.5
Ohio State University	85	0	..	..	85	0	0.0
University of Cincinnati	78	0	1	0	79	0	0.0
Western Reserve University	70	0	1	0	71	0	0.0
University of Oklahoma	54	2	..	..	54	2	3.6
University of Oregon	71	0	2	0	73	0	0.0
Hahnemann Medical College	125	28	2	0	127	28	18.1
Jefferson Medical College	134	1	4	0	138	1	0.7
Temple University	130	2	9	0	139	2	1.4
University of Pennsylvania	159	3	14	0	173	3	1.7
University of Pittsburgh	64	3	..	..	64	3	4.5
Woman's Medical College	27	2	6	0	33	2	5.7
Medical College of South Carolina	47	0	..	..	47	0	0.0
Meharry Medical College	54	2	2	0	56	2	3.4
University of Tennessee	110	1	..	..	110	1	0.9
Vanderbilt University	58	0	..	..	58	0	0.0
Baylor University	76	1	1	0	77	1	1.3
University of Texas	182	1	1	0	183	1	0.5
University of Vermont	23	0	22	1	45	1	2.2
Medical College of Virginia	73	0	..	..	73	0	0.0
University of Virginia	64	0	1	0	65	0	0.0
Marquette University	66	0	13	0	79	0	0.0
University of Wisconsin	63	0	..	..	63	0	0.0
Totals: U. S. Schools	4,788	117	960	12	5,748	129	2.2
Dalhousie University	9	0	..	..	9	0	0.0
Laval University	4	6	..	..	4	6	60.0
McGill University	21	4	16	0	37	4	9.8
Queen's University	5	3	..	..	5	3	37.5
University of Alberta	4	1	..	..	4	1	20.0
University of Manitoba	4	0	..	..	4	0	0.0
University of Montreal	2	3	..	..	2	3	60.0
University of Toronto	21	1	1	0	22	1	4.4
University of Western Ontario	5	0	..	..	5	0	0.0
Totals: Canadian Schools	75	18	17	0	92	18	16.4
Extinct Medical Schools	106	6	13	0	119	6	4.8
Unapproved Schools	217	223	..	..	217	223	50.7
Foreign Medical Schools	890	740	50	1	940	741	44.1
Totals	6,076	1,104	1,040	13	7,116	1,117	13.6

P—Passed; F—Failed.

FAILURES BEFORE MEDICAL EXAMINING BOARDS

Data recorded in table 11 refer to the number who failed state board examinations and were graduates of a medical school located in the state in which they were examined, and, by comparison, the number of graduates licensed in the state who obtained their medical training in schools in other states. Most noteworthy is the fact that in New York state 3.9 per cent of those who studied medicine in eight schools in that state who appeared for licensure in 1942 failed, while a much higher percentage, 9.0, who obtained their medical training in forty-four schools located in other states failed. Yale University had no failures before the Connecticut medical examining board, while 12.2 per cent of the graduates of eighteen schools of other states failed in Connecticut. Only 41 physicians failed examinations in the state in which the medical school they attended was located, and twenty-two states had no failures from schools within their boundaries. There were 65 failures from schools located in other states. Thirty-three states reported no failures during the year. Six states (table 24) had no failures in five years. In some states an applicant must receive an

TABLE 11.—*Licensure Failures by Graduates of Approved Schools Located in the State Where Examined and Elsewhere, 1942*

	Total No. Examined	No. Failures of Schools in State	No. Schools in State Represented	Per Cent Failed	No. Failures of Schools Out of State	No. Schools Out of State Represented	Per Cent Failed	Total Per Cent Failed in All U. S. Schools
Arkansas	61	0	1	0.0	0	0	0.0	0.0
California	410	5	4	1.2	5	42	1.2	2.4
Colorado	57	0	1	0.0	0	6	0.0	0.0
Connecticut	49	0	1	0.0	6	18	12.2	12.2
Dist. of Columbia	23	0	2	0.0	0	6	0.0	0.0
Georgia	95	0	2	0.0	0	10	0.0	0.0
Illinois	300	2	4	0.7	1	21	0.3	1.0
Indiana	120	0	1	0.0	0	8	0.0	0.0
Iowa	40	0	1	0.0	0	4	0.0	0.0
Kansas	98	0	1	0.0	0	9	0.0	0.0
Kentucky	84	0	1	0.0	0	4	0.0	0.0
Louisiana	174	0	2	0.0	0	18	0.0	0.0
Maryland	152	1	2	0.7	1	10	0.7	1.3
Massachusetts	60	0	3	0.0	8	23	13.3	13.3
Michigan	190	0	2	0.0	0	20	0.0	0.0
Minnesota	188	1	1	0.5	0	35	0.0	0.5
Missouri	175	0	2	0.0	0	13	0.0	0.0
Nebraska	78	2	2	2.6	0	1	0.0	2.6
New York	431	17	8	3.9	39	44	9.0	13.0
North Carolina	77	0	1	0.0	0	25	0.0	0.0
Ohio	269	0	3	0.0	1	25	0.3	0.3
Oklahoma	53	0	1	0.0	0	1	0.0	0.0
Oregon	42	0	1	0.0	0	8	0.0	0.0
Pennsylvania	443	11	6	2.5	1	31	0.2	2.7
South Carolina	46	0	1	0.0	0	3	0.0	0.0
Tennessee	188	0	3	0.0	0	9	0.0	0.0
Texas	274	2	2	0.7	2	15	0.7	1.5
Vermont	24	0	1	0.0	1	5	4.2	4.2
Virginia	132	0	2	0.0	0	12	0.0	0.0
Wisconsin	114	0	2	0.0	0	20	0.0	0.0
States Without Medical Schools								
Alabama	32				0	12	0.0	0.0
Arizona	7				0	7	0.0	0.0
Delaware	7				0	5	0.0	0.0
Florida	110				7	43	6.4	6.4
Idaho	11				1	8	9.1	9.1
Maine	26				2	11	7.7	7.7
Mississippi	42				0	12	0.0	0.0
Montana	5				0	4	0.0	0.0
Nevada	1				0	1	0.0	0.0
New Hampshire	3				0	2	0.0	0.0
New Jersey	73				0	18	0.0	0.0
New Mexico	0				0	0	0.0	0.0
North Dakota	6				1	4	16.7	16.7
Rhode Island	30				0	17	0.0	0.0
South Dakota	4				0	4	0.0	0.0
Utah	10				0	8	0.0	0.0
Washington	53				0	18	0.0	0.0
West Virginia	26				0	16	0.0	0.0
Wyoming	0				0	0	0.0	0.0
Alaska & Hawaii	13				0	12	0.0	0.0

average of at least 75 per cent and not fall below 50 per cent in any one subject. In case of failure in not more than two subjects, the applicant is entitled to another examination in those subjects within twelve months. Those so failing are not reported to the office of the Council as failures. The highest percentage of failures was reported by North Dakota, 16.7. In this state 6 physicians, representing four medical schools located in other states, were examined, of whom 1 failed. Four states without medical schools reported eleven failures.

Of the 8,557 licentiates in 1942, 813 had previously been unsuccessful before a licensing board. Of the approved schools 100 graduates were licensed after one failure in the state of licensure and 53 after one failure elsewhere. Forty-two received licenses after more than one failure; 27 received licenses in the state of their previous failures; 11 succeeded in obtaining licenses after more than one failure elsewhere, while 4 licentiates had previously failed in the state where licensed and also in other states. Forty-two were licensed after more than one failure.

TABLE 12.—*Failures Before Medical Licensing Boards by Licentiates, 1942*

	Licenses Issued by Examination, Reciprocity or Endorsement	Approved Schools					Foreign Schools					Unapproved Schools					Total Failures by Licentiates, 1942
		Licensed After One Failure		Licensed After Two or More Failures			Licensed After One Failure		Licensed After Two or More Failures			Licensed After One Failure		Licensed After Two or More Failures			
		Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed and Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed and Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed and Elsewhere	
Alabama	92	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Arizona	25	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Arkansas	80	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
California	740	8	2	3	1	3	4	2	1	2	..	..	..	..	..	..	26
Colorado	84	..	..	..	1	..	..	..	..	..	..	2	..	..	..	..	3
Connecticut	125	2	1	..	..	..	1	..	4	..	1	..	..	..	..	..	9
Delaware	9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
District of Columbia	95	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	2
Florida	110	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
Georgia	115	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Idaho	13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Illinois	509	2	1	2	..	..	11	1	5	..	2	1	..	..	..	..	25
Indiana	210	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1
Iowa	87	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Kansas	121	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Kentucky	127	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Louisiana	335	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Maine	64	..	1	1	1	..	3	2	..	6	3	..	..	..	..	..	17
Maryland	234	1	2	..	..	..	1	1	..	1	..	..	..	..	..	..	6
Massachusetts	312	..	5	..	..	..	1	2	3	4	3	18	1	23	..	2	62
Michigan	301	..	5	..	1	..	..	..	..	..	..	..	..	..	..	..	6
Minnesota	226	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Mississippi	75	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1
Missouri	250	..	1	..	1	..	..	.	..	..	..	..	..	..	..	..	2
Montana	21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Nebraska	84	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Nevada	19	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	2
New Hampshire	31	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1
New Jersey	238	..	7	..	..	..	2	1	8	5	5	..	..	..	..	..	28
New Mexico	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
New York	1,330	73	2	20	..	1	147	2	273	2	42	..	..	..	..	..	562
North Carolina	136	..	2	..	1	..	..	..	..	..	..	..	..	..	1	..	4
North Dakota	15	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Ohio	370	..	2	..	1	..	..	..	1	..	..	..	..	..	..	..	4
Oklahoma	84	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Oregon	76	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1
Pennsylvania	516	4	4	..	..	..	3	3	..	..	1	..	..	..	..	..	15
Rhode Island	37	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
South Carolina	55	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1
South Dakota	10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Tennessee	232	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	4
Texas	299	..	..	1	..	..	..	..	..	1	..	..	1	..	..	..	3
Utah	30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Vermont	31	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Virginia	211	..	2	..	..	..	..	1	..	3	..	..	..	..	..	..	6
Washington	100	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	2
West Virginia	65	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Wisconsin	170	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	3
Wyoming	16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Alaska, Hawaii and Virgin Islands	25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0
Totals	8,557	100	53	27	11	4	173	16	295	27	57	21	3	23	1	2	813

In another table presented in this group (table 12) is given the number licensed after failing a state board examination once and after two or more failures, these groups being classified by indication whether the failure or failures have been in the state in which they were receiving a license or elsewhere and also whether the failure has been in the state where licensed and elsewhere. These two divisions are given for three groups of candidates, namely graduates of approved medical schools, foreign faculties of medicine and unapproved institutions. The total number of candidates examined and licensed, or granted licenses by endorsement or reciprocity, in each state is also shown.

The graduates of foreign faculties of medicine who were registered after previous failures numbered 568 and those of unapproved schools 50.

In the computation of these statistics it was noted that 60 licentiates had failed five or more times. Of these, 13 had five failures before obtaining a license, 19 had six, 10 failed seven examinations, 5 individuals failed eight tests, 1 failed 9, 2 failed ten, 3 failed eleven, 2 failed twelve and 2 failed thirteen examinations before being successful. Three graduates of European medical schools were licensed after eighteen, twenty and twenty-one failures, respectively, in Connecticut, New York and New Jersey. The majority of these physicians

with multiple failures were Massachusetts and New York examinees. Thirteen states licensed in 1942 only physicians who never failed a state board examination, while New York licensed 562 who had previously failed. With the exception of California, Illinois, Maine, Massachusetts, New Jersey, New York and Pennsylvania no state licensed more than 9 such candidates.

ments with any state. With the exception of Florida, however, these states and Hawaii will register diplomates of the National Board of Medical Examiners by endorsement. Those desiring licenses by reciprocity or endorsement in seventeen states are required to obtain a certificate from the state board of examiners in the basic sciences before being eligible for licensure.

TABLE 13.—*Reciprocity*

Marginal Number	The Examining Board of	Reciprocates with, or Endorses Certificates Granted by: Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	Marginal Number
1	Alabama	..	..	+	+	+	..	+	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	..	+	+	1
2	Arizona	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
3	Arkansas (regular board)	+	+	..	+	+	..	..	+	..	+	..	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..	+	+	..	+	+	3
4	California	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
5	Colorado	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5
6	Connecticut (reg. & homeo. bds.)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6
7	Delaware (regular board)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7
8	District of Columbia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8
9	Florida	No reciprocity or endorsement policies											..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9
10	Georgia	+	..	+	+	+	..	..	+	..	..	..	..	+	+	+	+	+	+	+	..	+	+	+	+	..	+	+	+	+	+	10
11	Idaho	No reciprocal relations											..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11
12	Illinois	+	..	+	+	+	..	..	..	..	..	..	..	+	+	+	+	+	+	+	..	+	+	+	+	..	+	+	..	+	..	..	12
13	Indiana	+	..	+	+	+	..	..	+	..	+	..	+[32]	..	+	+	+	+	+	+	..	+	+	+	+	..	+	+	+	+	+	+	13
14	Iowa	+	..	+	+	+	..	..	+	..	+	..	+	+	..	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	14
15	Kansas	+	+	+[19]	+	..	..	+	+	..	+	..	+	+	+	..	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	15
16	Kentucky	+	..	+	+	+	..	+	+	..	+	..	+	+	+	+	..	+	+	+	..	+	+	+	+	..	+	+	+	+	+	+	16
17	Louisiana (reg. & homeo. bds.)	+	+	+	+	+	..	+	+	..	+	..	+	+	+	+	+	..	+	+	..	+	+	+	+	..	+	+	+	+	+	+	17
18	Maine	..	..	+	+	+	..	+	+	..	+	..	+	+	+	+	+	+	..	+	..	+	+	+	+	..	+	+	+	+	..	+	18
19	Maryland (reg. & homeo. bds.)	+	..	+	+	..	..	..	+	..	+	..	+	+	+	+	+	+	+	..	..	+	+	+	+	+	+	+	+	+	+	+	19
20	Massachusetts	No reciprocal relations											..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	20
21	Michigan	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	..	..	+	+	+	+	+	+	+	+	+	+	21
22	Minnesota	+	..	+	+	..	..	+	..	..	+	..	+	..	+	..	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	22
23	Mississippi	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	23
24	Missouri	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	24
25	Montana	+	+	+	+	+	..	+	+	..	..	..	..	+	+	+	+	+	+	+	..	+	+	+	+	..	+	+	+	+	+	+	25
26	Nebraska	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	26
27	Nevada	..	..	+[21]	+	+	..	..	..	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	..	..	27
28	New Hampshire	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	28
29	New Jersey	+	..	..	+	+	..	..	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	..	..	..	+	..	+	..	..	..	29
30	New Mexico	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	30
31	New York	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	31
32	North Carolina	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	32
33	North Dakota	+	..	+	+	+	..	..	..	..	+	..	+	+	+	+	+	+	..	..	..	+	..	..	+	+	+	+	+	+	+	+	33
34	Ohio	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	34
35	Oklahoma	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	35
36	Oregon	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	36
37	Pennsylvania	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	37
38	Rhode Island	No reciprocal relations											..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	38
39	South Carolina	+	..	..	..	..	..	..	..	..	+	..	..	..	..	+	+	+	+	+	..	+	..	..	..	..	..	..	..	..	+	+	39
40	South Dakota	+	+	+	+	+	..	..	..	..	+	..	..	+	+	+	+	+	..	..	..	+	+	+	..	+	+	+	..	..	..	+	40
41	Tennessee	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	..	+	+	+	41
42	Texas	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	42
43	Utah	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43
44	Vermont	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	44
45	Virginia	+	..	+	+	..	..	+	+	..	+	..	..	+	+	+	+	+	+	+	..	+	+	+	..	+	..	..	+	+	+	45
46	Washington	+	..	..	+	+	..	..	+	..	+	..	+	..	+	+	..	+	+	+	..	+	+	+	+	+	+	..	..	..	..	..	46
47	West Virginia	+	..	+	..	..	..	+	+	..	+	..	+	+	+	+	..	+	+	+	..	+	+	+	+	+	+	..	+	..	47
48	Wisconsin	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	48
49	Wyoming	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	49
50	Alaska	+	..	+	+	+	..	+	..	..	..	..	..	+	..	+	+	..	..	+	..	+	..	+	+	..	..	+	+	+	..	50
51	Hawaii	No reciprocal relations											..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	51
52	Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	52

Some states have additional requirements for graduates of schools outside the United States and Canada.

+, indicates reciprocal or endorsement relationships have been established; .. indicates no reciprocal or endorsement relationships have been established.

1. 1st P, first papers required; ⊕, full citizenship required.
2. In most cases there is a small additional recording or registration fee.
3. If state of original license grants similar privileges.
4. Internship accepted in lieu of one year's practice.
5. Professional practice required.
6. No professional practice required.
7. Just preceding application.
8. No basic science reciprocity—examination must be within the state.
9. Basic science certificate required either by reciprocity or examination in addition to basic science subjects of National Board.
10. Reserve officers not eligible.
11. Leading medical schools of Great Britain recognized.
12. Oral examination required when original license is ten or more years old.
13. Applicant must have resided in the state used as basis of application for one year after date on said certificate.
14. Oral examination required.
15. Unless in practice in another state for five years.
16. Actual practice for a period of three years immediately preceding date of application.
17. Practical, clinical examination required.
18. Foreign graduates only.
19. Regular and Homeopathic boards.
20. Graduates of foreign medical schools may be accepted if they present also a diploma from an approved medical school in the United States.
21. Regular board.
22. Fee same as applicant's state charges if more than $50.
23. Oral examination required if applicant's state requires it.
24. If an applicant passes the examination in the state from which he transfers after the completion of his internship, no practice is required.

REGISTRATION BY RECIPROCITY AND ENDORSEMENT

Charted in table 13 are the reciprocity and endorsement policies of the various states, the District of Columbia, Alaska, Hawaii and Puerto Rico. Four states—Florida, Idaho, Massachusetts and Rhode Island, as well as Hawaii, do not have reciprocal agreements with any state. With the exception of Florida, however, these states and Hawaii will register diplomates of the National Board of Medical Examiners by endorsement. Those desiring licenses by reciprocity or endorsement in seventeen states are required to obtain a certificate from the state board of examiners in the basic sciences before being eligible for licensure.

Reciprocal relationships have been established by twenty-six states. Twenty-four states, including four which have regularly established reciprocal relations, will register licentiates who present credentials which correspond with those required by their respective states at the time such licenses were issued. The medi-

cal practice acts give the examining boards the privilege of using their discretion in determining the acceptability of a candidate. The states in which diplomates of the National Board of Medical Examiners and retired officers of the government services are eligible for licensure on the basis of their credentials are also indicated. Specific requirements, such as professional practice, oral examination and internship, are recorded as is also the fee for a license without written examination. There is included a column outlining citizenship prerequisites. By footnote is indicated whether physicians of Canadian birth are exempt from the citizenship requirements. In very few states are graduates of foreign medical schools accepted on a reciprocal basis. Other requisites or exemptions are mentioned in footnotes.

The credentials presented by physicians granted licenses in 1942 to practice medicine and surgery without written examination are given in table 14. There were 2,445 so registered on the basis of licenses issued by other states, the District of Columbia, Canada and foreign countries.

The greatest number of licenses by this method was issued in California, where 283 were registered. Five other states endorse more than 100 such candidates, namely New York 259, New Jersey 128, Michigan 116,

and Endorsement Policies

Marginal Number	Reciprocates with, or Endorses Certificates Granted by: New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Alaska	Puerto Rico	At the Discretion of the Board	National Board of Medical Examiners	U. S. Government Services	Requirements: Basic Science Certificate	Internship	Professional Practice	Citizenship [1]	Fees, Dollars [2]	Miscellaneous	Marginal Number
1	+	+	+	+	+	+	+	..	+	+	+	+	..	+	+	+	+	+	+	+	..	+[3]	+	+	⊕	1[4]	⊕[45]	50	..	1
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	+[6,6]	⊕[8]	..	3[4,7]	..	100	42	2
3	+	+	+	+	+	..	+	..	+	+	+	+	..	+	+	..	+	+	+	+	..	..	+[9]	..	⊕	..	1[4]	⊕	50[22]	42	3
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[12]	+[12,42]	+[10,11]	..	..	4[1]	..	100	42	4
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+[9]	10	⊕	..	1[4]	1st P	50	42	5
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14,30]	+[14,36]	..	⊕[15]	..	3[4,16]	1st P	50	..	6
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+[5]	+	..	⊕	2	⊕	100	..	7
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[3]	+[36]	+[5]	⊕	⊕	2[7]	..	50	..	8
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9
10	..	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	..	..	..	+	..	..	..	0	⊕	50	..	10
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	..	..	⊕	..	⊕	50	..	11
12	..	..	+	+	+	+	+	..	..	+	+	+	+	+	+	..	+	+	+	+	..	..	+[17]	+[10,17]	..	⊕	..	1st P	25	17.42	12
13	+	+	+	+	+	+	+	..	..	+	+	+	+	+	+	..	+	+	+	+	..	..	+[49]	..	..	..	1[4]	..	50	..	13
14	..	+	+	+	+	..	+	..	..	+	+	..	+	..	+	+	+	+	+	..	..	..	+	..	⊕	⊕	1[4]	⊕[45]	50	..	14
15	..	+	+	+	+	..	+	..	+	+	+	+	+	+	+	..	+	+	+	+	..	..	+	..	..	..	1[4,7]	⊕	25	42	15
16	..	..	..	+	+	..	+	..	+	+	+	+	+	+	+	+	+	+	..	..	..	..	+	+	..	..	1[4]	⊕	50	42	16
17	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	..	..	..	..	..	..	33	1[4]	1st P[40,46]	50	20	17
18	..	..	+	+	+	+	+	..	+	..	+	+	+	+	+	..	+	+	+	..	..	..	+[14]	..	..	⊕[18]	1[4]	⊕[45]	52	..	18
19	..	+	..	+	+	+	+	..	+	..	+	+	..	+	+	..	+	+	+	..	..	+	+	..	..	..	1[4]	1st P	50	42	19
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..	0	1st P	25	..	20
21	..	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	..	..	..	+[35]	..	⊕[37]	⊕	1[4]	⊕	55	24	21
22	..	+	..	..	+	+	+	..	..	+	+	+	+	+	+	+	+	+	+	..	..	..	+	..	⊕	..	0	⊕[45]	75	17.42	22
23	..	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	..	..	..	+	..	..	..	..	⊕[45]	50	42.44	23
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+[47]	..	..	⊕[33]	1[4]	⊕[45]	50	..	24
25	..	+	+	..	+	+	..	+	..	+	..	+	+	..	+	..	+	+	+	..	+	..	+[14]	..	..	⊕	1[4]	⊕	75	45	25
26	+	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	..	..	..	+[36]	..	⊕	..	1[1]	⊕	50	..	26
27	+	..	..	+	+	+	+	..	..	+	+	..	+	+	..	..	+	+	..	+	..	..	+	..	..	⊕	1[4]	1st P	100	14.42	27
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	+	..	⊕	0	⊕[45]	20	42	28
29	+	..	+	+	+	..	+	..	..	..	..	+	+	+	+	..	+	+	..	..	..	+	+	..	..	⊕	0	⊕	100	..	29
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	+	⊕	..	1[4]	1st P	50	42	30
31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	..	..	2	1st P	25	..	31
32	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	+	..	..	0	⊕	50	42	32
33	..	+	..	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	..	..	..	+	..	..	⊕	1	⊕[45]	50[22]	14.42	33
34	..	+	+	..	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	..	..	+	+	..	..	..	1[4]	⊕	50	23	34
35	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	⊕	⊕	1[4]	⊕	100	42.34	35
36	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+[9,36]	..	⊕	⊕	1[4]	..	100	51	36
37	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	+	..	⊕	2[24]	1st P	100	42	37
38	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	..	⊕	⊕	0	1st P	20	..	38
39	..	+	..	+	+	..	+	..	..	+	+	+	..	+	+	..	+	..	+	..	..	..	+	..	..	..	1[4]	⊕	50	42	39
40	..	+	+	+	+	..	..	..	+	..	+	+	+	+	+	+	+	+	+	..	..	..	+	+	⊕	⊕	1	1st P	50	42	40
41	+	+	..	+	+	..	+	..	+	+	..	+	+	..	+	+	+	+	+	..	..	..	+[30]	+	⊕	..	0	..	10	42	41
42	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[31]	..	+	..	..	1[25]	⊕	50	31	42
43	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	+	..	⊕	4[8]	⊕[45]	50	42	43
44	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[3]	+[38]	..	..	⊕	0	⊕	50	..	44
45	+	+	..	+	+	..	+	..	+	+	+	+	..	+	..	+	+	+	+	..	..	+	+	+	..	⊕[18]	2[26]	⊕[45]	50	..	45
46	..	..	..	+	+	+	+	..	..	+	+	+	+	+	+	..	..	+	..	+	..	..	+[8]	..	⊕[9]	⊕	0	1st P	25	42	46
47	..	+[27]	+	+	..	+	..	+	+	+	+	+	+	+	+	..	..	+[28]	+	+	..	..	+	..	..	⊕	2	⊕	100	42	47
48	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	..	+	⊕	⊕	1[29]	1st P	50[22]	42	48
49	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	+[14]	+	..	⊕	0	⊕	50	..	49
50	..	+	+	+	+	..	+	..	..	..	+	+	+	+	+	+	+	+	..	..	..	..	+	..	..	⊕	0	⊕	100	50	50
51	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	..	..	⊕	..	⊕	25	11.42.50	51
52	..	..	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+[39]	..	⊕	0	⊕	25	..	52

25. Internship accepted if served in this state.
26. Internship accepted—considered equivalent to two years' practice.
27. Five years' practice.
28. Conditionally.
29. A two year internship is accepted.
30. Diplomates of National Board not required to have been in practice for three years.
31. Graduates before 1907 required to take oral examination.
32. Clinical examination required.
33. Reciprocity applicants only.
34. Supplemental examination required in certain cases when accepting the examination of a state with whom reciprocal relations have not been established.
35. May be licensed after a special (written) supplemental examination.
36. Fee for license on basis of National Board certificate $25.
37. For matriculants after Oct. 15, 1937.
38. Fee, $20.
39. While on active duty only.
40. Permanent license withheld until completion of citizenship.
41. Graduates of foreign medical schools effective Sept. 15, 1935. Canadian schools exempted effective Sept. 19, 1939.
42. Graduates of foreign medical schools are not accepted.
43. Graduates of foreign medical schools must have fulfilled all requirements of California prior to admittance to examination for any certificate used as basis of application to California.
44. Graduates of approved schools of Canada eligible.
45. Not applicable to citizens of Canada.
46. Canadian citizens are required to file first papers.
47. Fee, $15.
48. Same as required of Utah candidates applying for licensure.
49. Diplomates are accepted on basis of reexamination. The question and answer manuscripts from the National Board are submitted for regrading.
50. All applicants must be graduates of a medical school approved by the American Medical Association.
51. Reciprocates with all states if applicant is reputable graduate of an approved medical school.

TABLE 14.—*Credentials Presented by Physicians for Licensure by Reciprocity and Endorsement, 1942*

Marginal Number..	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
	Total Licensed	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	District of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U. S. Govt. Services	National Board of Medical Examiners	U. S. Terr. and Possessions	Canadian & Foreign	Miscellaneous
Alabama	67	..	..	1	..	..	..	..	..	..	5	..	4	..	1	1	2	7	1	2	..	1	..	2	5	..	..	..	..	1	..	4	..	..	2	1	..	2	..	2	..	13	1	..	..	3	..	1	..	..	..	6	..	..	..
Arizona	16	..	..	1	..	..	..	..	..	1	..	..	2	1	..	..	..	..	..	1	..	1	1	..	..	..	..	..	..	..	..	1	1	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	3	..	1	..
Arkansas	19	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	2	..	1	..	..	..	3	1	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	5	1	..	..	..	..	..	..	..	..	2	..	..	..
California	283	..	1	2	..	5	1	..	1	1	1	2	33	4	11	12	3	6	2	6	1	11	15	1	11	..	15	2	..	1	..	22	..	3	15	..	2	6	..	..	3	4	2	2	..	1	6	..	6	..	12	48	3	..	..
Colorado	16	..	..	..	1	..	..	..	..	..	..	..	3	1	1	..	..	..	..	1	..	..	1	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	4	..	..	..
Connecticut	59	..	..	..	..	..	..	..	..	..	1	..	1	..	1	1	..	1	..	2	2	1	..	..	..	..	1	..	..	..	..	2	1	..	..	..	..	6	..	..	..	..	..	..	1	2	..	..	..	..	36	..	..	..
Delaware	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dist. Columbia	67	..	..	1	2	..	..	..	..	..	..	..	1	..	..	1	..	..	1	9	..	..	..	1	..	..	..	..	..	1	..	8	3	..	1	..	..	4	..	..	..	..	1	..	..	5	..	1	..	..	..	28	..	..	..
Florida	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Georgia	19	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	1	..	..	1	..	1	..	..	..	..	..	2	..	..	2	..	..	1	..	1	..	1	..	1	..	..	..	..	..	2	..	..	..	..	..	..
Idaho	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	..	..
Illinois	93	..	..	2	3	..	..	..	..	..	..	..	..	2	5	..	..	..	..	2	..	4	4	2	21	..	..	..	..	..	..	..	..	5	1	..	5	..	..	..	5	3	1	..	1	..	..	7	..	..	20	..	..	..
Indiana	80	..	..	1	..	1	..	..	..	..	1	..	22	..	3	3	4	1	..	1	..	9	..	..	6	1	2	..	..	1	..	1	..	..	7	..	..	2	..	..	1	2	..	..	..	..	..	1	4	..	..	6	..	..	..
Iowa	23	..	..	..	2	..	..	..	..	..	..	..	6	..	..	1	..	.	..	1	..	..	2	..	1	..	1	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	7	..	..	..
Kansas	22	1	..	..	1	..	..	..	1	..	1	..	3	..	..	..	..	1	..	..	..	2	..	..	8	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2	..	..	..
Kentucky	39	..	..	..	..	..	..	..	..	..	..	..	5	2	..	1	..	..	1	1	..	1	..	..	3	..	..	..	..	..	..	2	..	..	5	..	..	1	..	3	..	5	..	..	..	1	..	..	..	..	3	5	..	..	..
Louisiana	26	..	..	2	..	..	..	..	..	..	..	..	..	..	4	..	1	..	..	..	..	1	4	3	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	1	6	..	1	..	..	..	..	..	..	..	..	..	..
Maine	22	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	3	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	1	..	..	..	..	11	..	..	..
Maryland	69	..	..	..	1	..	1	..	2	..	1	..	3	2	..	1	..	..	1	..	..	1	..	..	..	..	1	..	..	2	..	12	3	..	2	..	..	7	..	1	..	1	..	..	..	5	..	2	..	..	20	..	..	..
Massachusetts	111	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	111	..	..	..
Michigan	116	..	..	2	4	..	1	..	..	..	2	..	15	2	5	2	1	..	..	1	..	..	6	..	8	..	2	..	..	1	..	2	2	..	11	1	2	14	..	..	..	6	3	..	1	2	..	..	9	..	..	11	..	..	..
Minnesota	27	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	..	..	..	1	..	..	..	..	1	..	3	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	2	..	1	2	..	..	11	..	..	..
Mississippi	32	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..	3	7	..	..	..	1	..	..	..	..	1	..	..	1	..	..	..	..	1	1	..	..	..	..	..	10	1	..	..	1	..	..	1	..	..	1	..	..	..
Missouri	68	..	..	5	1	1	2	..	..	..	..	..	5	1	2	10	1	1	..	1	..	2	2	1	..	..	..	..	1	..	..	4	1	..	6	..	..	2	..	..	1	2	1	..	..	2	..	1	1	..	..	11	..	..	..
Montana	14	..	..	..	1	1	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	1	5	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..
Nebraska	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	3	..	..	..
Nevada	17	..	..	..	2	..	..	..	..	..	1	..	2	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..
New Hampshire	27	..	..	..	..	..	1	..	..	..	..	..	2	..	..	..	..	..	1	..	2	..	1	..	..	1	..	..	..	..	4	1	..	..	..	..	2	..	..	..	..	..	..	..	1	..	..	..	..	..	10	..	1	..
New Jersey	128	..	..	..	1	1	..	..	..	..	..	1	1	2	..	2	1	..	1	6	..	3	1	..	1	..	..	..	..	..	..	57	..	..	5	..	..	9	..	..	..	1	..	..	..	1	..	..	1	..	..	33	..	..	..
New Mexico	8	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	3	..	..	..
New York	259	..	..	..	5	..	..	..	..	..	..	..	..	2	..	..	..	2	..	20	..	5	2	..	1	..	..	..	..	..	..	..	3	1	..	..	2	15	..	..	..	..	1	..	3	5	..	1	..	..	189	1	1	..
North Carolina	59	1	..	..	..	..	1	..	..	..	2	..	3	..	2	1	1	..	..	3	..	..	2	..	..	..	..	..	..	1	..	4	..	..	..	..	..	7	..	2	..	6	..	..	..	7	..	1	..	..	13	..	2	..
North Dakota	9	..	..	..	..	..	..	..	..	..	..	..	2	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	4	..	..	..
Ohio	99	1	..	..	1	1	..	..	..	..	1	..	6	3	2	3	11	2	1	5	2	6	1	..	3	..	1	..	1	1	..	..	..	..	..	1	9	..	..	..	6	1	..	..	2	..	2	3	..	..	23	..	..	..
Oklahoma	33	..	..	1	..	..	..	1	..	..	..	..	1	..	4	3	3	2	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	4	..	..	1	..	..	..	2	5	..	..	2	..	..	..	..	..	2	..	..	..
Oregon	26	..	..	..	3	..	..	..	..	..	..	..	1	..	1	..	1	..	..	1	..	..	3	..	3	..	2	..	..	..	..	1	1	..	..	..	2	..	..	..	..	..	..	..	..	2	..	..	..	..	5	..	..	..
Pennsylvania	62	..	..	..	2	..	3	1	..	1	1	..	1	2	1	..	..	..	..	3	1	2	1	..	..	1	..	..	..	1	..	10	1	..	3	..	..	..	..	..	..	..	..	..	..	2	..	1	2	..	..	22	..	..	..
Rhode Island	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	..	..	..
South Carolina	9	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..
South Dakota	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	2	..	..	..
Tennessee	45	1	..	..	1	1	..	..	..	..	7	..	2	2	..	1	4	1	1	1	..	1	2	2	1	..	1	..	..	..	..	1	..	..	3	1	..	3	..	..	..	2	..	..	..	1	..	..	..	..	5	..	..	..
Texas	105	1	2	10	7	2	..	..	..	1	1	..	9	1	2	2	2	16	..	1	..	1	4	1	5	..	1	..	..	..	1	4	2	..	7	5	..	2	..	1	..	8	..	..	..	1	1	..	3	..	..	..	1	..	..
Utah	15	..	..	..	1	1	..	..	..	..	..	..	4	..	..	..	..	..	..	..	..	1	..	..	4	..	..	..	..	..	..	3	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Vermont	13	..	..	..	..	..	1	..	..	..	..	..	..	..	1	1	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	1	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Virginia	66	..	..	1	2	..	1	..	4	..	1	..	1	1	..	..	2	..	..	3	..	1	1	..	2	..	2	..	..	..	1	10	4	..	5	..	..	3	1	..	..	5	..	..	..	..	..	1	..	..	5	..	..	..
Washington	49	..	..	..	3	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	1	..	7	1	5	..	..	..	..	..	..	..	4	1	8	2	..	..	1	1	..	..	..	..	..	1	..	..	12	..	..	..
West Virginia	38	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	5	1	..	3	..	..	..	1	2	..	1	..	..	..	..	..	1	..	7	..	..	2	..	1	..	3	1	..	2	6	..	..	2	..	..	7	1	..	..
Wisconsin	45	..	..	2	1	..	..	..	..	..	..	..	11	..	1	1	2	..	..	2	..	3	4	..	3	..	..	..	..	..	..	2	..	..	5	..	..	5	..	..	..	1	1	..	..	..	..	..	1	..	1	..	..	..	..
Wyoming	14	..	..	..	1	1	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	2	..	3	..	..	..	..	2	..	..	..	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Alaska, Hawaii & Virgin Islands	10	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	4	..	..	2
Totals	2,445	5	5	32	48	17	12	2	10	4	29	3	157	28	52	52	50	51	11	84	9	62	65	18	102	3	47	2	1	16	2	165	28	6	100	16	16	121	2	12	8	30	31	5	10	55	12	12	44	0	20	702	6	5	2
Marginal Number..	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55

Massachusetts 111 and Texas 105. The largest group presenting the same type of credentials were the 702 diplomates of the National Board of Medical Examiners; 189 were registered on the basis of such credentials in New York and 111 in Massachusetts.

More than 100 physicians holding licenses from Illinois, Missouri, New York and Pennsylvania, respectively, were licensed in other states. No physician holding a Wyoming license applied for registration in another state during the year. Five physicians received licenses by recognition of their Canadian or foreign credentials in four states. One each was licensed in Arizona, New Hampshire and New York on the basis of a license from Great Britain, Germany and Austria, respectively, while North Carolina registered 2, 1 on the basis of a license from the Dominion of Canada and the other of a Nova Scotia license. Two were admitted to private practice in the Virgin Islands. Twenty retired officers of the government services secured licenses without written examinations in five states, 12 in California, 3 in Kentucky, 1 in North Dakota, 3 in Virginia and 1 in Wisconsin.

TABLE 16.—*Licentiates Representing Additions to the Medical Profession, 1942*

	Examination	Reciprocity and Endorsement	Total
Alabama	19	2	21
Arizona	6	2	8
Arkansas	61	1	62
California	396	14	410
Colorado	66	1	67
Connecticut	50	22	72
Delaware	6	0	6
District of Columbia	18	18	36
Florida	43	0	43
Georgia	90	2	92
Idaho	2	0	2
Illinois	382	13	395
Indiana	122	1	123
Iowa	61	4	65
Kansas	95	2	97
Kentucky	86	2	88
Louisiana	299	0	299
Maine	28	7	35
Maryland	157	9	166
Massachusetts	159	86	245
Michigan	172	7	179
Minnesota	132	8	140
Mississippi	38	0	38
Missouri	177	1	178
Montana	3	1	4
Nebraska	75	1	76
Nevada	0	0	0
New Hampshire	2	6	8
New Jersey	105	15	120
New Mexico	0	1	1
New York	982	165	1,147
North Carolina	77	10	87
North Dakota	1	0	1
Ohio	247	12	259
Oklahoma	47	1	48
Oregon	41	4	45
Pennsylvania	419	10	429
Rhode Island	20	6	26
South Carolina	45	1	46
South Dakota	1	0	1
Tennessee	164	2	166
Texas	284	0	284
Utah	15	0	15
Vermont	16	1	17
Virginia	140	7	147
Washington	52	2	54
West Virginia	14	1	15
Wisconsin	105	0	105
Wyoming	0	1	1
Hawaii	9	3	12
Totals	5,529	452	5,981

Not included in the table were 13 osteopaths licensed by medical examining boards in six states and the District of Columbia, namely Indiana, New Hampshire, Oregon, Texas, Wisconsin and Wyoming.

There were registered in four states 6 physicians who presented credentials from the territories and possessions, namely 3 in California and 1 in Texas with credentials from Hawaii, and 1 each in New York and Washington with credentials from Puerto Rico and Alaska respectively. Diplomates of the National Board of Medical Examiners were licensed in forty-two states and Hawaii.

Fifty-seven licentiates of New York secured licenses to continue practice in New Jersey. Similarly, 33 physicians who were licensed in Illinois were registered in California. Less than 10 of the licentiates of Alabama, Arizona, Delaware, Florida, Idaho, Massachusetts, Montana, Nevada, New Hampshire, New Mexico, North Dakota, Rhode Island, South Dakota and Utah were endorsed in other states.

A total of 2,445 physicians secured licenses by endorsement of their credentials in 1942. The physicians so licensed, and in addition 13 osteopaths registered by medical examining boards, are recorded by school of graduation and state or territory where licensed in table 15. All of the four year medical schools in the United States were represented, as well as eight in Canada, thirty-six faculties of medicine and one licensing corporation of other countries, one unapproved medical school, forty-four medical schools now extinct and several osteopathic schools. The largest number of graduates of any one school so licensed was from Harvard Medical School, who were registered in twenty-five states and Hawaii. Tufts College Medical School had 83 of its graduates licensed by this method in twenty states. Graduates of foreign faculties of medicine numbered 85 and were registered in twenty states on the basis of a license issued elsewhere in the United States. One hundred and fifty-three graduates of medical schools now extinct migrated to thirty-six states and Alaska, 29 going to California. Fourteen graduates of unapproved schools were registered in seven states.

TABLE 17.—*Licentiates Representing Additions to the Medical Profession, 1935-1942*

Year	Examination	Reciprocity and Endorsement	Total
1935	5,099	411	5,510
1936	5,548	629	6,177
1937	5,812	612	6,424
1938	5,759	501	6,260
1939	5,584	460	6,044
1940	5,432	455	5,887
1941	5,239	473	5,712
1942	5,529	452	5,981
Totals	44,002	3,993	47,995

Of the 2,458 candidates licensed by reciprocity and endorsement, 2,158 were graduates of existing approved medical schools in the United States, 48 of eight approved schools in Canada; 85 were graduates of foreign faculties of medicine, 153 of institutions now extinct and 14 from unapproved and osteopathic schools.

LICENTIATES REPRESENTING ADDITIONS TO THE MEDICAL PROFESSION

The number of physicians who received their first license to practice medicine and surgery in 1942, and therefore represent additions to the medical profession, are recorded in table 16. Figures represent candidates examined in 1942 and immediately licensed, also those examined in previous years whose licenses were withheld for lack of internship, citizenship and other technicalities and issued in 1942, and those without a state license who were during the year certified on the basis of the examination of the National Board of Medical Examiners, government services, Canadian and foreign credentials. The majority represent recent graduates.

There were 5,981 additions to the medical profession in 1942. It is not known how many of these are at present in civilian practice. The annual number of deaths reported to the American Medical Association in 1942 was 3,353. It would appear, therefore, that the physician population in the United States last year was increased by 2,628. The greatest number in any one state, 1,147, was added in New York. More than 300 received their first licenses in California, Illinois and Pennsylvania. In thirteen states between 100 and 299 physicians received initial licenses. Thirty states, the District of Columbia and Hawaii increased their physician population by fewer than 100. Nevada granted no original licenses during 1942.

Of the licentiates constituting additions to the medical profession last year, 5,529 secured their licenses by examination and 452 by endorsement of credentials. Those licensed by endorsement consisted of a few registered on foreign credentials and to a large extent diplomates of the National Board of Medical Examiners.

Comparative figures for seven years and 1942 are given in table 17. Last year the number of physicians representing additions to the medical profession increased 269 over the previous year but the number so registered was 443 fewer than in 1937, in which year 6,424 were registered, the greatest number in the eight year period shown.

Altogether in eight years 47,995 physicians received original licenses, 44,002 after written examination and 3,993 by endorsement of credentials. In the same period 72,107 medical licenses have been issued, 50,027 by examination and 22,080 by endorsement of credentials. Of these, 24,112 were previously licensed.

In table 18 data pertaining to those securing their first medical license are tabulated for each of the medi-

TABLE 18.—*Licentiates Representing Additions to the Medical Profession Classified by Schools, 1942*

SCHOOL	Examination	Reciprocity and Endorsement	Totals
ARKANSAS			
University of Arkansas School of Medicine	65	..	65
CALIFORNIA			
College of Medical Evangelists	58	14	72
Stanford University School of Medicine	58	..	58
University of California Medical School	101	..	101
University of Southern California School of Medicine	51	1	52
COLORADO			
University of Colorado School of Medicine	53	3	56
CONNECTICUT			
Yale University School of Medicine	16	19	35
DISTRICT OF COLUMBIA			
George Washington University School of Medicine	46	14	60
Georgetown University School of Medicine	36	16	52
Howard University College of Medicine	29	1	30
GEORGIA			
Emory University School of Medicine	50	..	50
University of Georgia School of Medicine	43	..	43
ILLINOIS			
Loyola University School of Medicine	61	..	61
Northwestern University Medical School	145	6	151
University of Chicago, The School of Medicine	50	3	53
University of Illinois College of Medicine	133	..	133
INDIANA			
Indiana University School of Medicine	106	..	106
IOWA			
State University of Iowa College of Medicine	57	4	61
KANSAS			
University of Kansas School of Medicine	81	..	81
KENTUCKY			
University of Louisville School of Medicine	89	..	89
LOUISIANA			
Louisiana State University School of Medicine	148	..	148
Tulane University of Louisiana School of Medicine	187	1	188
MARYLAND			
Johns Hopkins University School of Medicine	77	9	86
University of Maryland School of Medicine and College of Physicians and Surgeons	85	3	88
MASSACHUSETTS			
Boston University School of Medicine	4	25	29
Harvard Medical School	60	42	102
Tufts College Medical School	13	50	63
MICHIGAN			
University of Michigan Medical School	98	1	99
Wayne University College of Medicine	47	..	47
MINNESOTA			
University of Minnesota Medical School	111	2	113
MISSOURI			
St. Louis University School of Medicine	92	5	97
Washington University School of Medicine	92	2	94
NEBRASKA			
Creighton University School of Medicine	52	..	52
University of Nebraska College of Medicine	74	3	77
NEW YORK			
Albany Medical College	..	23	23
Columbia University College of Physicians and Surgeons	44	10	54
Cornell University Medical College	43	9	52
Long Island College of Medicine	61	15	76
New York Med. Coll., Flower and Fifth Ave. Hospitals	9	36	45
New York University College of Medicine	84	13	97
Syracuse University College of Medicine	39	4	43
University of Buffalo School of Medicine	5	25	30
University of Rochester School of Medicine and Dentistry	33	3	36
NORTH CAROLINA			
Duke University School of Medicine	11	24	35
OHIO			
Ohio State University College of Medicine	77	..	77
University of Cincinnati College of Medicine	73	..	73
Western Reserve University School of Medicine	60	..	60
OKLAHOMA			
University of Oklahoma School of Medicine	48	..	48
OREGON			
University of Oregon Medical School	66	2	68
PENNSYLVANIA			
Hahnemann Medical College and Hospital of Philadelphia	95	..	95
Jefferson Medical College of Philadelphia	121	..	121
Temple University School of Medicine	121	2	123
University of Pennsylvania School of Medicine	136	4	140
University of Pittsburgh School of Medicine	57	..	57
Woman's Medical College of Pennsylvania	19	5	24
SOUTH CAROLINA			
Medical College of the State of South Carolina	44	1	45
TENNESSEE			
Meharry Medical College	51	..	51
University of Tennessee College of Medicine	81	..	81
Vanderbilt University School of Medicine	47	..	47
TEXAS			
Baylor University College of Medicine	71	..	71
University of Texas Medical Branch	179	..	179
VERMONT			
University of Vermont College of Medicine	17	3	20
VIRGINIA			
Medical College of Virginia	67	..	67
University of Virginia Department of Medicine	61	..	61
WISCONSIN			
Marquette University School of Medicine	58	5	63
University of Wisconsin Medical School	57	..	57
CANADA			
Dalhousie University Faculty of Medicine	9	..	9
Laval University Faculty of Medicine	4	..	4
McGill University Faculty of Medicine	14	7	21
Queen's University Faculty of Medicine	3	..	3
University of Alberta Faculty of Medicine	1	..	1
University of Montreal Faculty of Medicine	2	..	2
University of Toronto Faculty of Medicine	9	..	9
University of Western Ontario Medical School	4	1	5
Foreign Medical Faculties	805	30	835
Extinct Medical Schools	187	2	189
Unapproved Schools	88	4	92
Totals	5,529	452	5,981

cal schools in the United States. Notable among the schools having a considerable number of graduates receiving their first license were 188 graduates of Tulane University School of Medicine and 179 graduates of the University of Texas Medical Branch. Ten other schools contributed more than 100. The medical schools of Boston University, the University of Vermont, Albany Medical College and the Woman's Medical College of Pennsylvania contributed fewer than 30. McGill University Faculty of Medicine added 21 of its graduates to the medical profession of the United States.

From the United States schools there were added to the profession 4,811, Canadian schools 54, foreign faculties of medicine 835, medical schools no longer in existence 189 and unapproved schools 92. Rush Medical College, which ceased to function with the graduating class of 1942, is represented among the extinct medical schools, and the greater number of the 189 represented are graduates of Rush Medical College.

Table 19 records increases in the physician population grouped in nine geographic divisions. The largest number, 1,696, was added in the Middle Atlantic states. The East North Central group had a total of 1,061, the West South Central 693, the South Atlantic 638, the West North Central 558, the Pacific states 509, the New England group 403, the East South Central 313 and the Mountain states 98. Twelve were added to the medical profession by licensure in Hawaii.

There were 5,529 graduates of all schools added to the medical profession in 1942 by examination for licensure and 452 by reciprocity or endorsement, a total of 5,981. The number of living physicians in the United States at the time the American Medical Directory was published in 1942 was 180,496.

TABLE 19.—*Licentiates Representing Additions to the Medical Profession Grouped in Geographic Divisions, 1942*

	Examination	Reciprocity and Endorsement	Total
New England			
Maine	28	7	35
New Hampshire	2	6	8
Vermont	16	1	17
Massachusetts	159	86	245
Rhode Island	20	6	26
Connecticut	50	22	72
	275	128	403
Middle Atlantic			
New York	982	165	1,147
New Jersey	105	15	120
Pennsylvania	419	10	429
	1,506	190	1,696
East North Central			
Ohio	247	12	259
Indiana	122	1	123
Illinois	382	13	395
Michigan	172	7	179
Wisconsin	105	..	105
	1,028	33	1,061
West North Central			
Minnesota	132	8	140
Iowa	61	4	65
Missouri	177	1	178
North Dakota	1	..	1
South Dakota	1	..	1
Nebraska	75	1	76
Kansas	95	2	97
	542	16	558
South Atlantic			
Delaware	6	..	6
Maryland	157	9	166
District of Columbia	18	18	36
Virginia	140	7	147
West Virginia	14	1	15
North Carolina	77	10	87
South Carolina	45	1	46
Georgia	90	2	92
Florida	43	..	43
	590	48	638
East South Central			
Kentucky	86	2	88
Tennessee	164	2	166
Alabama	19	2	21
Mississippi	38	..	38
	307	6	313
West South Central			
Arkansas	61	1	62
Louisiana	299	..	299
Oklahoma	47	1	48
Texas	284	..	284
	691	2	693
Mountain			
Montana	3	1	4
Idaho	2	..	2
Wyoming	..	1	1
Colorado	66	1	67
New Mexico	..	1	1
Arizona	6	2	8
Utah	15	..	15
Nevada	..	..	..
	92	6	98
Pacific			
Washington	52	2	54
Oregon	41	4	45
California	396	14	410
	489	20	509
Territory			
Hawaii	9	3	12
Totals	5,529	452	5,981

ACCELERATION OF MEDICAL COURSES

As a war emergency the medical schools of the country, with three exceptions, have adopted an accelerated program which provides for the utilization of the long summer vacation as a teaching period, and by continuing the schedule throughout the calendar year the four year medical course is completed in three years. The medical practice acts in a number of states, however, preclude licensure of applicants who pursue medical training under the accelerated plan. An analysis of the medical licensure laws of all the states was made by the Bureau of Legal Medicine and Legislation of the American Medical Association, which prompted the Federation of State Medical Boards of the United States, in cooperation with the Bureau, to present the results of its survey to the medical examining boards of the respective states. Letters were written to those states in which amendatory legislation was considered necessary in order that candidates following an accelerated program of medical education might qualify for licensure. There were nine such states: Georgia, Illinois, Kansas, Maryland, Michigan, Nebraska, New Jersey, South Carolina and Virginia. The legislature of Virginia was in session in 1942 and a bill was passed to remedy the situation in that state. The legislatures of the other eight states are meeting in 1943. Of the states in which a legislative amendment was necessary, Kansas, Maryland, Michigan, New Jersey and South Carolina have already completed legislative action so that graduates, after accelerated courses, may obtain licensure. In Nebraska corrective legislation is pending. No legislation has, to date, been introduced in Georgia or Illinois. The licensing board of Georgia has informed the office of the Council on Medical Education and Hospitals that requirements in the state do not prohibit licensure of physicians who have completed their studies under an accelerated program.

ACCELERATION OF PREMEDICAL COURSES

The minimum requirement for admission to approved medical schools since 1918 has been two years of college training, and since 1938 three years has been recommended. With the exception of California, Con-

necticut, Nebraska and New Mexico (table 20) the state licensing boards, by statute in the majority of instances, require that an applicant for licensure must present evidence of having completed two years of college.

In November 1942 the Council on Medical Education and Hospitals recommended that for the duration of the war premedical education, including satisfactory courses in physics, biology and chemistry, including organic chemistry, be included within two calendar years of instruction. Such a program is being adopted by practically all the medical schools of the country.

TABLE 20.—*Requirements of Preliminary Training by Medical Licensing Boards*

Two Years or More of College		
Alabama	Louisiana	Oklahoma
Alaska	Maine	Oregon
Arizona	Maryland	Pennsylvania
Arkansas	Massachusetts	Puerto Rico
Colorado	Michigan	Rhode Island
Delaware	Minnesota	South Carolina
District of Columbia	Mississippi	South Dakota
Florida	Missouri	Tennessee
Georgia	Montana	Texas
Hawaii	Nevada	Utah
Idaho	New Hampshire	Vermont
Illinois	New Jersey	Virginia
Indiana	New York	Washington
Iowa	North Carolina	West Virginia
Kansas	North Dakota	Wisconsin
Kentucky	Ohio	Wyoming
One Year of College		
Connecticut		New Mexico
High School Graduation or Its Equivalent		
California		Nebraska

The collegiate training programs now being formulated by the Army and Navy, however, provide for an acceleration of premedical education which may present licensure problems in the future, and additional legislation will be necessary in some states in order that a physician who has had less than the two year premedical requirement may obtain licensure.

REQUIRED HOSPITAL INTERNSHIPS

In tables 21 and 22 are listed the medical schools and licensing boards now requiring internships for the M.D. degree and licensure respectively.

The medical licensing boards of twenty-two states, the District of Columbia, Alaska, Hawaii and Puerto Rico require that all applicants for licensure serve a hospital internship. Here again the accelerated program has introduced a problem for the licensing boards. With the graduation from medical schools at nine month intervals, hospitals are accepting interns on a twelve month basis, but to avoid overlapping or to be of some aid to hospitals unable to secure interns, some hospitals will permit interns to complete the one year internship allowed by military authorities in another civilian or government hospital. In some instances this is being done independently and without affiliation with the other hospitals. In some ten states the medical practice acts require that an applicant must have completed an internship of at least twelve months. Replies to a recent inquiry addressed to the respective licensing boards of those states that require an internship as a prerequisite for licensure, regarding the acceptability of a year's internship served in two independent hospitals, indicate that such a service would be acceptable for licensure in the majority of these states, Montana, New Hampshire, Washington and Wyoming, however, replied that the acceptability of an internship thus served would rest with the discretionary powers of the board. Illinois replied that it would not accept an internship served in this fashion, while Oklahoma responded that the matter had been referred to the attorney general for an opinion.

TABLE 21.—*Internship Required by Medical Licensing Boards of All Candidates*

Alabama	Montana	Rhode Island
Alaska	Nevada	South Dakota
Delaware*	New Hampshire	Utah
District of Columbia	New Jersey	Vermont
Hawaii	North Dakota	Washington
Idaho	Oklahoma	West Virginia
Illinois	Oregon	Wisconsin
Iowa	Pennsylvania*	Wyoming
Michigan	Puerto Rico	

*Some states require the internship of graduates of medical faculties abroad and reciprocity or endorsement applicants.
* Internship requirement shortened to nine months for the duration of the war.

Legislation introduced in Delaware and Pennsylvania to reduce the required period of internship from twelve months to nine months has been enacted into law.

Some states permit an intern to take the medical licensing examination before completion of his internship but withhold issuance of the license.

Seven medical schools in the United States and four in Canada require completion of the internship before awarding the M.D. degree. Several medical schools will accept research or clinical work in lieu of hospital service. At the University of Illinois College of Medicine the internship requirement was waived in 1941 because of the national emergency. With the institution of the accelerated curriculum at the University of California Medical School the requirement for an internship was discontinued for the seniors enrolled for the session 1941-1942. Wayne University College of Medicine granted degrees in March of this year to the seniors accelerating the medical course in 1942, thus waiving the requirement of an internship. However, the seniors who were in session during 1941-1942 are at present interning and will receive their degrees in June 1943. Marquette University School of Medicine, on the other hand, dropped the requirement of internship in August 1942, thus permitting the seniors who completed their work in June of that year to secure their degrees in December 1942.

TABLE 22.—*Internship Required by Medical Schools*

College of Medical Evangelists
University of Southern California School of Medicine
Stanford University School of Medicine
Loyola University School of Medicine
Northwestern University Medical School
University of Minnesota Medical School
Duke University School of Medicine
University of Alberta Faculty of Medicine
University of Manitoba Faculty of Medicine
Dalhousie University Faculty of Medicine
University of Montreal Faculty of Medicine

The Univeristy of Minnesota Medical School in 1915 was the first school to adopt the internship as a basis for the M.D. degree, and the first state exacting this requirement was Pennsylvania in 1914. Several states in addition require graduates of medical schools abroad and reciprocity or endorsement applicants to have completed an internship. Since 1936 nine schools have dropped the internship requirement.

LICENSURE FOR THE RELOCATED PHYSICIAN

Removal of physicians from civilian practice has resulted in a shortage of physicians in critical areas. To assist the physician attempting to relocate in such

areas or in industrial sections of the country, it has been suggested that licensing boards modify their reciprocal and endorsement relationships and expedite licensure procedures. In eleven states, namely

Arizona	Georgia	Rhode Island
Arkansas	Louisiana	South Carolina
Delaware	Mississippi	Washington
Florida	Nevada	

the medical practice acts provide for the issuance of temporary permits or certificates to practice medicine valid until the next ensuing examination. Whether or not the enactment of basic science laws in some of these states will interfere with the issuance of temporary permits is a matter about which no final opinion can be ventured.

In addition to the states named, the New Jersey medical practice act exempts from its requirements a lawfully qualified physician and surgeon of another state taking charge temporarily of the practice of a lawfully qualified physician of New Jersey during his absence from the state, on written request to the board of medical examiners for permission to do so. Pending legislation provides that such permission may be granted for a period of not less than two weeks nor more than four months and that the board of medical examiners, at its discretion, may extend such permission for further periods of two weeks to four months but not to exceed

TABLE 23.—*Annual Registration*

Alaska	Hawaii	New York
Arizona	Idaho	North Dakota
Arkansas	Iowa	Oklahoma
California	Kansas	Oregon
Colorado	Louisiana	Pennsylvania
Connecticut	Minnesota	Texas
Delaware	Missouri*	Utah
District of Columbia	Montana**	Washington
Florida	Nebraska	West Virginia
Georgia	Nevada	Wyoming

* Biennial registration. ** After July 1, 1943.

in the aggregate one year. In two states, Delaware and Nevada, legislation has been enacted providing for the issuance of temporary permits or licenses, valid generally for the duration of the emergency. In Pennsylvania and Maine similar legislation is pending. In Kansas and Vermont the proposals to authorize the issuance of temporary permits or licenses were defeated this year.

ANNUAL REGISTRATION

Twenty-seven states, the District of Columbia, Alaska and Hawaii, as shown in table 23, require that all applicants register annually. Some of these states require such registration whether or not physicians reside in the state. The fee is generally $2. A bill to establish annual registration in Wisconsin is pending.

Legislation to relieve physicians in military service from the necessity of complying with the annual registration laws has been enacted in Kansas, Minnesota, New York, Utah, Washington and West Virginia. Similar legislation failed of enactment in Idaho and has been received unfavorably by legislative committees in Colorado and Missouri. Wisconsin legislation pending exempts physicians in military service.

The licensing boards of all the states named in table 23, with the exception of Arizona, Colorado, Florida and Wyoming, have indicated that the requirement of annual registration has been waived for physicians in the armed services.

CANDIDATES EXAMINED

In table 24 are tabulated the number of candidates examined in the various states, territories and possessions in the five year period from 1938 to 1942. For each year there is recorded the number who passed and failed licensing examinations. Totals for the five year period and the percentage of candidates who failed are also given. In New York 5,017 were tested and passed, 2,450 in Illinois, 2,440 in Pennsylvania and 2,040 in California. More than 1,000 were successful also in

TABLE 24.—*Candidates Examined, 1938-1942*

	1938		1939		1940		1941		1942		Totals for Five Years		
	P	F	P	F	P	F	P	F	P	F	P	F	%F
Alabama	29	0	14	0	26	0	26	3	34	0	129	3	2.3
Arizona	15	0	11	1	20	1	17	0	9	0	72	2	2.7
Arkansas	72	0	68	0	58	0	60	0	61	0	319	0	0.0
California	402	15	383	19	396	29	400	11	459	16	2,040	90	4.2
Colorado	78	3	69	3	75	4	54	4	68	3	344	17	4.7
Connecticut	73	24	53	47	53	33	80	36	59	31	318	171	35.0
Delaware	14	0	11	2	15	0	18	0	7	0	65	2	3.0
Dist. Columbia	33	0	54	0	49	2	33	0	27	0	196	2	1.0
Florida	153	41	172	27	131	6	143	7	110	8	709	89	11.2
Georgia	72	0	90	0	88	0	94	2	96	0	440	2	0.5
Idaho	28	0	24	8	40	1	30	0	12	1	134	10	6.9
Illinois	490	12	523	18	542	24	474	46	421	48	2,450	148	5.7
Indiana	110	1	112	0	125	0	120	0	128	0	595	1	0.2
Iowa	94	11	104	2	67	5	67	0	44	1	376	19	4.8
Kansas	93	1	85	0	92	0	92	0	99	0	461	1	0.2
Kentucky	81	1	88	0	77	0	84	0	84	0	414	1	0.2
Louisiana	184	2	153	0	154	1	145	1	175	0	811	4	0.5
Maine	39	7	42	6	32	14	38	12	42	6	193	45	18.9
Maryland	227	38	187	16	175	18	177	9	165	11	931	92	9.0
Massachusetts	207	220	277	257	338	299	254	288	201	251	1,277	1,315	50.7
Michigan	226	1	217	0	247	0	239	0	196	0	1,125	1	0.1
Minnesota	219	2	217	1	196	0	240	0	199	1	1,071	4	0.4
Mississippi	31	1	21	0	42	0	38	0	43	2	175	3	1.7
Missouri	174	3	211	0	179	0	196	0	182	1	942	4	0.4
Montana	11	0	11	0	9	0	7	1	7	1	45	2	4.3
Nebraska	85	0	78	0	84	0	92	0	77	2	416	2	0.5
Nevada	5	0	4	0	3	1	5	2	1	0	18	3	14.3
New Hampshire	17	0	14	2	9	1	10	1	3	3	53	7	11.7
New Jersey	281	53	237	109	179	36	157	29	110	10	964	237	19.7
New Mexico	2	0	2	0	0	1	2	0	0	0	6	1	14.3
New York	1,078	372	1,024	695	956	1,088	888	968	1,071	660	5,017	3,783	43.0
North Carolina	85	0	57	0	65	0	54	0	77	0	338	0	0.0
North Dakota	15	2	17	1	24	0	15	1	6	1	77	5	6.1
Ohio	342	11	369	15	305	16	263	14	274	6	1,553	62	3.8
Oklahoma	46	0	43	0	47	0	54	0	54	0	244	0	0.0
Oregon	54	0	26	0	33	0	22	0	45	0	180	0	0.0
Pennsylvania	512	9	548	10	478	24	446	18	456	21	2,440	82	3.3
Rhode Island	26	1	25	0	19	0	22	0	35	0	127	1	0.8
South Carolina	39	1	48	0	41	0	45	0	46	0	219	1	0.5
South Dakota	8	0	15	0	7	0	9	0	5	0	44	0	0.0
Tennessee	179	3	193	0	188	1	199	4	190	0	949	8	0.8
Texas	200	26	208	15	209	25	177	13	289	15	1,083	94	8.0
Utah	14	0	17	0	9	0	15	0	14	0	69	0	0.0
Vermont	26	1	17	0	21	1	18	0	24	1	106	3	2.8
Virginia	127	0	113	1	142	1	146	3	145	1	673	6	0.9
Washington	72	0	59	1	48	0	69	1	60	0	308	2	0.6
West Virginia	65	1	33	0	38	0	34	0	27	0	197	1	0.5
Wisconsin	115	0	111	0	113	0	120	0	124	1	583	1	0.2
Wyoming	7	0	8	1	16	1	8	0	0	0	39	2	4.9
U. S. Terr. & Possessions	34	9	30	4	30	2	63	8	15	2	172	25	12.7
Total Examined	7,461		7,754		7,925		7,539		7,180		37,861		
Passed	6,589		6,493		6,290		6,059		6,076		31,507		
Failed	872		1,261		1,635		1,482		1,104		6,354		
Percentage Failed	11.7		16.3		20.6		19.6		15.4		16.8		

Massachusetts, Michigan, Minnesota, Ohio and Texas. The smallest number, 6, passed the examinations in New Mexico.

The percentage of failures in all states in the period has increased from 11.7 in 1938 to 15.4 in 1942. However, the percentage of failures last year was lower than in the three previous years when 19.6, 20.6 and 16.3 respectively failed.

The percentage of candidates who failed in examinations in the past five years is given in the last column for each state. The greatest percentage of failures, 50.7, occurred in Massachusetts. The high percentage in this state is due to the fact that, by law, the licensing board is required to admit to its examinations the graduates of unapproved schools, many of whom repeatedly fail. New York had a failure percentage of 43.0, occa-

sioned in large part by the admittance to examination of a considerable number of graduates of foreign faculties of medicine, who likewise repeatedly fail. On the other hand, twenty-nine states failed less than 5 per cent. In sixteen of these states the percentage

TABLE 25.—*Registration, 1904-1942*

Year	All Candidates Examined			Reciprocity or Endorsement	Total Registered
	Examined	Passed	Percentage Failed		
1904	7,056	5,693	19.3	1,005	6,698
1905	7,178	5,688	20.8	394	6,082
1906	8,040	6,373	20.7	1,502	7,875
1907	7,279	5,731	21.3	1,427	7,158
1908	7,775	6,089	21.7	1,284	7,373
1909	7,295	5,865	19.6	1,381	7,246
1910	7,011	5,719	18.4	1,640	7,359
1911	6,964	5,582	19.8	1,243	6,825
1912	6,880	5,467	20.5	1,273	6,740
1913	6,453	5,253	18.6	1,292	6,545
1914	5,579	4,379	21.5	1,439	5,818
1915	5,334	4,507	15.5	1,399	5,906
1916	4,878	4,151	14.9	1,353	5,504
1917	4,753	4,084	14.1	1,360	5,444
1918	3,667	3,184	13.2	1,047	4,231
1919	4,750	4,074	14.2	2,546	6,620
1920	4,796	4,062	15.3	2,558	6,620
1921	4,825	4,228	12.4	2,186	6,414
1922	4,031	3,539	12.2	2,073	5,612
1923	4,727	4,028	14.8	2,405	6,433
1924	5,392	4,756	11.8	1,922	6,678
1925	6,002	5,450	9.2	1,861	7,311
1926	5,770	5,314	7.9	1,955	7,269
1927	5,389	5,002	7.2	2,176	7,178
1928	5,458	5,090	6.7	2,228	7,318
1929	5,629	5,282	6.2	2,420	7,702
1930	5,571	5,255	5.7	2,366	7,621
1931	5,611	5,263	6.2	2,211	7,476
1932	5,675	5,247	7.6	1,885	7,132
1933	5,673	5,244	7.6	1,989	7,233
1934	6,144	5,627	8.4	2,160	7,788
1935	6,443	5,859	9.1	2,196	8,055
1936	6,917	6,223	10.0	2,775	8,998
1937	7,334	6,604	10.0	3,203	9,807
1938	7,461	6,589	11.7	2,956	9,545
1939	7,754	6,493	16.3	2,872	9,365
1940	7,925	6,290	20.7	2,864	9,154
1941	7,541	6,059	19.7	2,758	8,817
1942	7,180	6,076	15.4	2,458	8,534

of failures was less than 1. In five years six states, Arkansas, North Carolina, Oklahoma, Oregon, South Dakota and Utah, had no failures.

A total of 37,861 were examined from 1938 to 1942, inclusive of whom 31,507 passed and 6,354, 16.8 per cent, failed.

These figures represent examinations given and not individuals. A candidate who fails more than once in a given year is counted as only one failure, but should he fail in one of the succeeding years he is counted in that year. The same is true of successful candidates. This table is merely a compilation of the figures computed annually and grouped for comparison. It gives a fair approximation of the number of physicians added to the profession in five years by means of written examination. On page 101 is a compilation giving exact figures for the period 1935 to 1942.

REGISTRATION, 1904-1942

The study of totals and percentages for thirty-nine years (1904-1942) will be found in table 25. This table includes figures for each year covering the number examined and passed, the percentage failed, the number registered by reciprocity or endorsement and the total registered. There was no definite increase or decrease in the number registered from 1907 to 1933, but in 1936 there was a very noticeable increase which also appeared during the following three years, while since 1938 the number registered has decreased. However, the number licensed without examination since 1904 has been increasing as a result of the wider recognition of reciprocal relations and the acceptance of the certificate of the National Board of Medical Examiners.

The decrease of more than 1,200 in 1918 was due to the sudden withdrawal of physicians and recent graduates from civilian life in World War I. However, in the following year the number registered was 2,389 greater than in 1918.

A similar situation prevailed in 1941, when 337 fewer were registered, although this decrease was due in part to the fewer graduates of European schools registered as compared with several previous years. Again in 1942 there was a decrease of 283, which may be the result of recent graduates entering military service without first securing a state license.

The greatest number registered in thirty-nine years was 9,807 in 1937, of whom 6,604 passed licensing tests and 3,203 were endorsed by registration.

The percentage of failures annually dropped from 20.8 in 1905, when a great many proprietary medical schools were functioning, to 5.7 in 1930. Improvements in the standards of medical education have resulted in a decrease of failures in licensing examinations. With the migration of physicians to this country beginning in 1936 and the resultant licensure difficulties, the failures began to rise until they reached a peak of 20.7 per cent in 1940. The percentage dropped 1 in 1941 for the country as a whole and 4.3 in 1942. The rise of failure percentages in recent years has been due in large part to the inability of graduates of unapproved schools and of foreign faculties of medicine to obtain licensure successfully without failure.

While these figures represent those registered in the years given, they do not represent actual additions to the medical profession.

GRADUATES OF APPROVED MEDICAL SCHOOLS AND OTHERS REGISTERED, 1922-1942

The educational fitness of the individuals registered in twenty-one years is recorded in table 26. In the computation of these figures, schools rated as class A and B by the Council on Medical Education and Hospitals of the American Medical Association since 1907 are classified as approved. In the column "Others" are included individuals who graduated prior to 1907, when the first classification of schools was made, graduates of foreign faculties of medicine, class C graduates, osteopaths given recognition by medical licensing boards and graduates of schools not approved by the Council.

TABLE 26.—*Graduates of Approved Medical Schools and Others Registered, 1922-1942*

Year	Graduates of Approved Schools		Others		Totals
	Number	Per Cent	Number	Per Cent	
1922	4,519	80.5	1,093	19.5	5,612
1923	5,196	80.8	1,237	19.2	6,433
1924	5,686	85.2	992	14.8	6,678
1925	6,314	86.4	997	13.6	7,311
1926	6,441	88.7	828	11.3	7,269
1927	6,410	89.4	768	10.6	7,178
1928	6,585	90.1	733	9.9	7,318
1929	7,003	91.0	699	9.0	7,702
1930	7,011	92.1	610	7.9	7,621
1931	6,932	92.8	544	7.2	7,476
1932	6,675	93.7	457	6.3	7,132
1933	6,774	93.7	459	6.3	7,233
1934	7,171	92.1	617	7.9	7,788
1935	7,362	91.5	693	8.5	8,055
1936	7,932	88.2	1,066	11.8	8,998
1937	8,389	85.6	1,418	14.4	9,807
1938	8,315	87.1	1,230	12.9	9,545
1939	8,067	86.2	1,298	13.8	9,365
1940	7,779	85.0	1,375	15.0	9,154
1941	7,767	88.1	1,051	11.9	8,818
1942	7,247	84.9	1,287	15.1	8,534
Totals	145,575	88.2	19,452	11.8	165,027

In 1928 the classification A, B and C by the Council was discontinued and a list of approved medical schools has since been maintained.

Of the 8,534 registered by all methods in 1942, 84.9 per cent represent graduates of approved schools and 1,287, 15.1 per cent, the group designated as others.

In twenty-one years a total of 165,027 were registered, including 145,575 approved graduates (88.2 per cent) and 19,452 others (11.8 per cent). The improved standards in medical education are again evident by a study of these totals and the percentages representing approved graduates.

TABLE 27.—*Graduates of Unapproved Medical Schools Registered, 1937-1942*

	Examination						Reciprocity and Endorsement						
	1937	1938	1939	1940	1941	1942	1937	1938	1939	1940	1941	1942	Total
Arizona	2	1	2	0	0	0	0	0	0	0	0	0	5
Arkansas	0	1	0	0	0	0	0	1	0	0	0	0	2
California	0	0	0	1	1	0	0	0	1	0	0	0	3
Florida	2	2	1	0	0	0	0	0	0	0	0	0	5
Illinois	82	60	51	48	51	51	0	0	0	0	0	0	343
Indiana	0	0	0	0	0	0	0	3	1	2	0	1	7
Iowa	0	0	0	0	0	0	0	0	0	0	1	0	1
Kentucky	0	0	0	0	0	0	2	1	2	2	0	0	7
Massachusetts	97	58	79	98	90	105	0	0	0	0	0	0	527
Mississippi	0	0	0	0	0	1	0	0	0	0	0	0	1
Missouri	0	0	0	0	1	0	0	1	0	0	0	0	2
Nebraska	0	0	0	0	0	0	1	0	0	0	0	0	1
New Jersey	1	7	0	0	0	0	2	4	4	13	8	0	39
New Mexico	0	1	0	0	0	0	0	2	0	2	0	0	5
New York	0	0	0	0	0	0	14	8	12	8	0	0	42
North Carolina	2	0	0	0	0	0	0	0	0	0	0	0	2
Ohio	23	32	36	0	0	0	0	0	0	0	0	0	91
Pennsylvania	1	4	1	5	0	0	0	0	0	0	0	0	11
Texas	0	1	4	6	0	0	3	0	0	0	0	0	14
Virginia	1	0	1	0	0	0	0	0	0	0	0	0	2
Alaska, Hawaii, and Puerto Rico	1	0	0	1	1	0	0	0	0	0	0	0	3
Totals	212	167	175	159	144	157	22	20	20	27	9	1	1,113

The number of graduates of approved schools in the period shown has annually represented more than 80 per cent of those registered. Until the influx of foreign graduates in 1936 the number in the second group has always been well below 1,000.

Of the 8,534 registered in 1942, 4,974 graduates of approved medical schools of the United States and Canada were licensed by examination and 2,273 were endorsed. By examination 217 unapproved graduates and 885 foreign graduates were registered. Likewise, among those registered by endorsement there were 21 graduates of unapproved schools and 164 foreign graduates.

New York registered 632 graduates of approved schools of a total of 1,330. This state licensed the largest number with foreign credentials, 698. Only graduates of approved schools in the United States and Canada were registered in Delaware, Florida, Idaho, Louisiana, Minnesota, New Mexico, North Dakota, Rhode Island, Utah and West Virginia.

GRADUATES OF UNAPPROVED MEDICAL SCHOOLS REGISTERED 1937-1942

Graduates of institutions which do not meet the educational standards outlined by the House of Delegates of the American Medical Association and enforced by the Council on Medical Education and Hospitals were registered in twenty states, Alaska, Hawaii and Puerto Rico in the last six years. The number so registered will be found in table 27. In the six years shown, 1,113 were registered, 1,014 by examination and 99 by reciprocity or endorsement. In 1942, 157 received licenses after examination in three states, namely Illinois, Massachusetts and Mississippi, and 1 by endorsement in Indiana. Two states (Massachusetts and Illinois) registered all but 2 of the candidates.

GRADUATES OF SCHOOLS OF OSTEOPATHY REGISTERED BY MEDICAL EXAMINING BOARDS, 1937-1942

The number of graduates of schools of osteopathy granted the privilege of practicing medicine or surgery or both by the medical examining boards of twelve states for a six year period are given in table 28. There have been 759 such individuals registered since 1937, 588 by examination and 171 by endorsement.

In 1942 ten states registered 60 by examination and 13 by recognition of their credentials, a total of 73. Massachusetts and Texas issued 31 of the 73 so licensed. In six years Texas registered 237, New Jersey 233 and Massachusetts 104, a total of 574.

PHYSICIANS EXAMINED ON THE BASIS OF CREDENTIALS OBTAINED IN COUNTRIES OTHER THAN THE UNITED STATES AND CANADA

The Council on Medical Education and Hospitals does not grade or classify medical schools outside the United States and Canada. It therefore has no evidence on which to base a rating. For several years the Council was in a position to verify the claims of physicians presenting such credentials, but for several years this has not been possible and on the licensing boards themselves rests the responsibility of both verifying and evaluating the credentials presented by these graduates. In the 1942 edition of the American Medical Directory a symbol in the biographic data indicates that the information given is the licensing board's record of the credential accepted as meeting the educational qualification for licensure. The absence of the symbol indicates that official verification is on file in the office of the Council.

Nineteen states reported that holders of credentials obtained in countries other than the United States and Canada are not eligible for licensure. The requirements for candidates for medical licensure in the United States, Alaska, Hawaii and Puerto Rico holding such credentials are given in table 29. Eighteen states, Alaska, Hawaii and Puerto Rico require full citizenship and nine states naturalization papers as a condition precedent to taking the examination. In some states the requirement is by rule of the medical board, in others the provision is by statute. In nine states foreign graduates are required to obtain a certificate in the basic sciences. Sixteen states, Alaska, Hawaii and Puerto Rico require a one year internship in a United

TABLE 28.—*Graduates of Schools of Osteopathy Registered by Medical Examining Boards, 1937-1942*

	Examination						Reciprocity and Endorsement						
	1937	1938	1939	1940	1941	1942	1937	1938	1939	1940	1941	1942	Total
Colorado	19	18	22	15	2	9	0	0	0	0	0	0	85
Connecticut	1	0	1	0	0	0	0	0	0	0	0	0	2
Dist. Columbia	0	1	0	1	0	2	0	0	0	0	2	1	7
Indiana	2	2	4	7	3	4	1	0	0	1	3	2	29
Massachusetts	18	10	10	27	26	13	0	0	0	0	0	0	104
New Hampshire	4	2	0	2	0	0	2	1	0	2	0	1	14
New Jersey	52	46	45	47	34	9	0	0	0	0	0	0	233
Oregon	1	1	1	0	2	1	0	1	1	1	2	5	16
Texas	17	22	19	20	13	17	72	37	17	1	1	1	237
Virginia	2	1	0	0	3	0	0	0	0	0	1	0	7
Wisconsin	1	0	0	1	2	5	2	3	0	0	0	1	15
Wyoming	0	0	0	1	0	0	4	1	2	0	0	2	10
Totals	117	103	102	121	85	60	81	43	20	5	9	13	759

TABLE 29.—*Requirements of Candidates for Medical Licensure on the Basis of Credentials Obtained in Countries Other Than the United States and Canada*

	Admitted to Examination	Admitted by Endorsement of State License*	Citizenship	Basic Science Certificate	Internship in Hospital in United States	Further Medical Training	Examination Fee, Dollars	Other Requirements
Alabama	+	..	+	..	+	..	10	1
Arizona	Not accepted							
Arkansas (reg. and homeo. boards)	Not accepted							
California	+	+[21]	..	..	+[18]	+[18]	25	11
Colorado	+	..	1st P	+	..	..	25[4]	3
Connecticut (regular board)	+	..	1st P	+	..	..	25	..
Delaware (regular board)	+	..	+	..	+	..	25	5,22
District of Columbia	..	+[6]	..	+	+	..	25	10
Florida	+	..	+	+	..	+[7]	25	..
Georgia	+	..	+	..	..	+[7]	20	..
Idaho	+	..	+	..	+	..	25	..
Illinois	+	..	1st P	..	+	..	15	8
Indiana	+	+	..	..	..	+[7]	25	..
Iowa	+[10]	..	+	+	+[2]	+[2]	25	..
Kansas	+	..	+	..	..	..	25	11
Kentucky	Not accepted							
Louisiana (reg. and homeo. boards)	Not accepted							
Maine	+	+	+	..	+	..	27	11
Maryland (reg. and homeo. boards)	+	..	1st P	..	[26]	..	25	19
Massachusetts	+	..	1st P	..	..	..	25	..
Michigan	+	+	+	+	+	+[7]	25	..
Minnesota	Not accepted							
Mississippi	+	..	+	..	+	..	10[3]	..
Missouri	+	+	+	..	..	..	15	..
Montana	Not accepted[25]							
Nebraska	+	+	+	+	..	..	25	..
Nevada	Not accepted							
New Hampshire	+	+[12]	+	..	+[14]	..	20	15
New Jersey	+	+	+	..	+[17]	..	25	..
New Mexico	Not accepted							
New York	+	+	1st P	..	..	..	25	..
North Carolina	Not accepted							
North Dakota	+	..	+	..	+	..	25	11
Ohio	+	+	+	..	..	..	25	..
Oklahoma	Not accepted							
Oregon	Not accepted							
Pennsylvania	+	..	1st P	..	+	..	25	..
Rhode Island	+	..	1st P	+	+[16]	+[16]	20	13
South Carolina	Not accepted							
South Dakota	Not accepted							
Tennessee	Not accepted							
Texas	+	+	+	..	..	..	25	..
Utah	Not accepted							
Vermont	Not accepted[23]							
Virginia	+	..	+	..	..	+	25	24
Washington	+	..	1st P	+	+	+[7]	25	9
West Virginia	Not accepted							
Wisconsin	Not accepted							
Wyoming	Not accepted							
Alaska	+	+	+	..	+	..	25	..
Hawaii	+	..	+	..	+	..	25	12
Puerto Rico	+	+	+	..	+	..	25	..

* Refer to chart of "Reciprocity and Endorsement Policies" for further data.

1. Certificate of National Board of Medical Examiners and licensure in country in which school of graduation is located.
2. Internship or one year in medical school in United States.
3. Certificate of National Board of Medical Examiners.
4. For graduates of last five years; if more than five years $50.
5. Residence of one year in Delaware.
6. If similar privileges are accorded licentiates of District of Columbia by licensing agency of jurisdiction from which applicant comes.
7. Senior year in class A medical school in United States.
8. Graduates of European medical colleges after July 1, 1936, Switzerland excepted, shall not be eligible for licensure. Graduates prior to this date may be accepted for the regular written and clinical examination after completing rotating internships in approved hospitals in Illinois.
9. Enemy aliens not accepted.
10. Application must be filed six months prior to date of examination.
11. Licensed to practice medicine and surgery in country in which school of graduation is located, otherwise required to complete senior year in approved medical school in United States.
12. Diplomates of National Board of Medical Examiners eligible.
13. License to practice medicine and surgery in the country in which the school of graduation is located.
14. Internship and one year graduate work.
15. Diplomates of the National Board of Medical Examiners exempt from special requirements.
16. Internship and graduate work.
17. Internship completed in foreign countries after July 1, 1934 not acceptable.
18. Rotating internship in approved hospital in the United States or completion of senior year in class A medical school in the United States.
19. These requirements apply also to graduates of Canadian schools.
20. Graduates from foreign medical colleges accepted if they present also a diploma from an approved medical school in the United States.
21. Provided standard was the same as California on the same date.
22. Degree from an American medical college acceptable to the Medical Council of Delaware required.
23. Diplomates of the National Board of Medical Examiners accepted.
24. Very limited number contracting to practice in rural districts may be accepted.
25. Effective July 1, 1943.
26. Homeopathic board requires one year internship in homeopathic hospital in the United States.

States hospital approved for intern training. In five states there is a requirement of a senior year's work in an approved medical school in the United States. Other prerequisites are given in footnotes beneath the table.

Table 30 presents figures relating to physicians examined on the basis of credentials obtained in countries other than the United States and Canada by licensing boards in the United States and Hawaii. The figures represent both American and foreign born physicians educated abroad. Ninety-nine faculties of medicine and three licensing corporations of twenty-two European and four other countries and the Philippines were represented. There were 1,630 examined by twenty-four states and Hawaii, of whom 890 passed and 740, 45.4 per cent, failed. Graduates of the University of Vienna represented the largest group, 397, who were examined in thirteen states with a failure percentage of 45.1. Nine states examined 111 graduates of the University of Berlin, of whom 50.5 per cent failed. Graduates of all other schools were examined in fewer than eleven states. The greatest number examined by any one state was 1,263 in New York, of whom 670 passed and 593 (47.0 per cent) failed. No other state examined more than 65 such candidates. Fewer than 5 were tested by thirteen states and Hawaii. The percentage of failures of graduates of seventy-seven of the schools was more than 25.

TABLE 31.—*Physicians Examined on the Basis of Credentials Obtained in Countries Other Than the United States and Canada, 1930-1942*

Year	Number Examined	Passed	Percentage Failed
1930	167	92	44.9
1931	158	91	42.4
1932	182	96	47.3
1933	200	129	35.5
1934	285	170	40.2
1935	437	303	30.7
1936	588	382	35.0
1937	920	637	30.8
1938	1,164	716	38.5
1939	1,691	839	50.4
1940	2,088	948	54.7
1941	1,717	698	59.2
1942	1,630	890	45.4
Totals	11,227	5,991	46.6

Table 31 records the number of graduates of faculties of medicine abroad examined for medical licensure in the United States in thirteen years, 1930-1942 inclusive. All together 11,227 were examined, of whom 5,991 passed and 42.6 per cent failed. The greatest number, 2,088, was examined in 1940, when 54.7 per cent failed. The number licensed in twelve years increased from 92 in 1930 to 948 in 1940. In 1942, 58 fewer than in 1940 were registered. The highest percentage of failures occurred in 1941, 59.2 per cent. At no time during this thirteen year period did fewer than 30.7 per cent fail.

In table 32 are assembled figures showing for the five year period 1937-1942 the number of graduates of faculties of medicine outside the United States and Canada admitted to licensing examinations in this country. Included also is a tabulation for 1942. The largest group from any one school examined in the five year period was 1,739 from the University of Vienna, of whom 49.6 per cent failed. There were 741 from the University of Berlin, of whom 49 per cent failed. Large numbers also were examined who presented credentials from the universities of Prague, Paris, Freiburg, Frankfurt-am-Main, Würzburg, Munich,

TABLE 32.—*Physicians Examined on the Basis of Credentials Obtained in Countries Other Than the United States and Canada by Licensing Boards of the United States and Possessions, 1937-1942*

	1937-1941		1942	
	Number Examined	Percentage Failed	Number Examined	Percentage Failed
AUSTRALIA				
University of Sydney	1	0.0	0	0.0
BELGIUM				
Université de Liege	3	33.3	1	100.0
Université Libre de Bruxelles	12	25.0	9	44.4
Universiteit Gent	4	75.0	0	0.0
BULGARIA				
University of Sofia	0	0.0	1	0.0
CHILE				
Universidad de Chile, Santiago	1	0.0	0	0.0
CHINA				
Pennsylvania Medical School, Shanghai	7	28.6	3	66.7
Peiping Union Medical College	0	0.0	2	50.0
Woman's Christian Medical College, Shanghai	1	0.0	0	0.0
CUBA				
Universidad de la Habana	5	60.0	0	0.0
CZECHOSLOVAKIA				
Deutsche Universität, Prag	174	51.7	43	51.2
Masarykova Universita, Brno	2	50.0	1	0.0
Universita Karlova, Praha	44	68.2	26	46.2
Universita Koménskeho, Bratislava	9	44.4	1	0.0
DENMARK				
Københavns Universitet	2	100.0	0	0.0
ENGLAND				
Charing Cross Hospital Medical School, London	1	0.0	0	0.0
King's College	0	0.0	1	0.0
Licentiate in Medicine, Surgery and Midwifery of the Apothecaries' Society of London	5	60.0	1	0.0
Licentiate of the Royal College of Physicians of London and Member of the Royal College of Surgeons of England	52	21.2	4	25.0
London Hospital Medical College	1	100.0	0	0.0
Middlesex Hospital Medical School, London	1	0.0	0	0.0
St. Bartholomew's Hospital Medical College	1	0.0	0	0.0
University of Birmingham	2	0.0	0	0.0
University of Bristol	1	0.0	0	0.0
University of Cambridge	3	0.0	0	0.0
University of Durham, Newcastle-upon-Tyne	2	0.0	0	0.0
University of Liverpool	1	0.0	0	0.0
University of London	2	0.0	1	0.0
University of Oxford	2	0.0	0	0.0
University of Sheffield	5	0.0	1	0.0
ESTONIA				
Université de Tartu	3	100.0	2	0.0
FRANCE				
Université de Bordeaux	3	33.3	0	0.0
Université de Lyon	12	41.7	2	50.0
Université de Montpellier	8	37.5	0	0.0
Université de Nancy	13	61.5	3	33.3
Université de Paris	136	41.9	43	46.5
Université de Strasbourg	6	33.3	3	33.3
Université de Toulouse	2	0.0	0	0.0
Université de d'Aix Marseille	0	0.0	1	0.0
GERMANY				
Albert-Ludwigs-Universität, Freiburg	147	52.4	20	45.0
Albertus-Universität, Königsberg	87	57.5	11	36.4
Christian-Albrechts-Universität, Kiel	34	50.0	7	57.1
Eberhard-Karls-Universität, Tübingen	29	58.6	3	33.3
Ernst-Moritz-Arndt Universität Greifswald	10	80.0	1	100.0
Friedrich-Alexanders-Universität, Erlangen	32	62.5	6	50.0
Friedrich-Wilhelms-Universität, Berlin	741	49.0	111	50.5
Georg August-Universität, Göttingen	50	58.0	9	44.4
Hamburgische Universität	94	40.4	11	36.4
Hessische Ludwigs-Universität, Giessen	46	58.7	6	66.7
Johann Wolfgang Goethe-Universität, Frankfurt-am-Main	145	43.4	23	52.2
Julius-Maximilians-Universität, Würzburg	162	55.6	31	48.4
Kaiser-Wilhelms-Universität, Strassburg	40	52.5	9	55.6
Karl-Franzens-Universität, Graz	43	56.0	8	37.5
Leopold-Franzens-Universität, Innsbruck	18	61.1	9	55.6
Ludwig-Maximilians-Universität, München	319	50.5	46	54.3
Medizinische Akademie Düsseldorf	26	46.2	6	0.0
Philipps-Universität, Marburg	17	64.7	3	66.7
Rheinische Friedrich-Wilhelms-Universität, Bonn	112	50.0	16	50.0
Schlesische-Friedrich-Wilhelms-Universität, Breslau	203	45.8	34	41.2
Thüringische Landesuniversitat, Jena	22	59.1	8	62.5
Universität Heidelberg	236	48.7	35	37.1
Universität Köln	53	45.3	6	50.0
Universität Leipzig	83	49.4	17	47.1
Universität Rostock	38	57.9	7	57.1
Universität Wien	1,739	49.6	397	45.1
Vereingten Friedrichs-Universität, Halle-Wittenberg	39	56.4	7	28.6
GREECE				
National University of Athens	20	85.0	6	50.0
GUATEMALA				
Universidad Nacional de Guatemala	1	0.0	0	0.0
HUNGARY				
Magyar Királyi Erzébet Tudományegyetem, Pecs	54	61.1	24	50.0
Magyar Királyi Ferencz József Tudományegyetem, Szeged	17	64.7	4	50.0
Magyar Királyi Pázmány Petrus Tudományegyetem, Budapest	128	56.2	40	35.0
Magyar Királyi Tisza-István-Tudományegyetem, Debrecen	7	57.1	1	0.0
IRELAND				
Licentiate of the Apothecaries' Hall, Dublin	2	50.0	0	0.0
Licentiate of the Royal College of Physicians of Ireland and Licentiate of the Royal College of Surgeons in Ireland	3	66.7	0	0.0
National University of Ireland	7	57.1	1	0.0
Queen's University, Belfast	3	0.0	0	0.0
University of Dublin	16	43.8	3	66.7
ITALY				
Regia Università degli Studi "Benito Mussolini" di Bari	9	66.7	1	100.0
Regia Università di Bologna	166	69.9	74	59.5
Regia Università di Catania	3	33.3	0	0.0
Regia Università di Firenze	30	40.0	3	33.3
Regia Università di Genova	29	82.8	10	80.0
Regia Università di Messina	17	94.1	2	100.0
Regia Università di Milano	32	46.9	8	50.0
Regia Università di Modena	20	80.0	4	50.0
Regia Università di Napoli	172	68.6	37	56.7
Regia Università di Padova	26	57.8	7	57.1
Regia Università di Palermo	18	77.8	3	66.7
Regia Università di Pavia	8	87.5	5	60.0
Regia Università di Perugia	14	64.3	5	60.0
Regia Università di Pisa	41	68.3	10	40.0
Regia Università di Roma	276	57.2	59	45.8
Regia Università di Siena	25	68.0	4	25.0
Regia Università di Torino	28	46.4	5	20.0
JAPAN				
Japan Medical College, Tokyo	5	100.0	0	0.0
LATVIA				
Latvijas Universitäte, Riga	4	75.0	0	0.0
LEBANON				
American University of Beirut	9	11.1	4	25.0
Université de St. Joseph, Beyrouth	4	50.0	0	0.0
LITHUANIA				
Universito Kaunas	0	0.0	1	100.0
MEXICO				
Escuela Libre de Homeopatia del Estado de Puebla	3	100.0	1	100.0
Escuela Médico Militar, México, D. F	4	100.0	1	100.0
Universidad Libre Méxicana Instituto de Ciencias	1	100.0	0	0.0
Universidad Nacional, México, D. F	12	66.7	2	50.0
NETHERLANDS				
Rijks-Universiteit te Gronigen	5	20.0	0	0.0
Rijks-Universiteit te Leiden	3	33.3	1	0.0
Rijks-Universiteit te Utrecht	3	33.3	0	0.0
Universiteit van Amsterdam	15	40.0	6	0.0
NEW ZEALAND				
University of New Zealand	1	0.0	0	0.0
NORWAY				
Kongelige Fredericks Universitet, Oslo	2	50.0	2	50.0
PERU				
Universidad Mayor de San Marcos	0	0.0	1	0.0
PHILIPPINES				
University of Santo Tomas	0	0.0	2	100.0
University of the Philippines	0	0.0	2	0.0
POLAND				
Uniwersytet Jagiellonski, Cracow	3	33.3	7	42.9
Uniwersytet Jana Kazimierza, Lwów	6	50.0	6	50.0
Uniwersytet Jozefa Pilsudskiégo, Warszawa	11	63.6	8	50.0
Uniwersytet Stefana Batorego, Wilno	9	44.4	3	100.0
PORTUGAL				
Universidade de Coimbra	4	25.0	0	0.0
Universidade de Lisboa	2	100.0	1	0.0
RUMANIA				
Universitatea din Bucuresti	2	50.0	0	0.0
Universitatea Regele Ferdinand I-iu din Cluj	3	33.3	0	0.0
SCOTLAND				
Anderson College of Medicine, Glasgow	3	66.7	0	0.0
Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow	1	0.0	0	0.0
Licentiate of the Royal College of Physicians of Edinburgh and Licentiate of the Royal College of Surgeons of Edinburgh	1	0.0	0	0.0
Licentiate of the Royal College of Physicians, of the Royal College of Surgeons, Edinburgh, and of the Royal Faculty of Physicians and Surgeons, Glasgow	315	25.4	65	23.1
School of Medicine of the Royal Colleges, Edinburgh	1	0.0	0	0.0
St. Mungo's College Medical School, Glasgow	1	0.0	0	0.0
University of Aderdeen	1	0.0	0	0.0
University of Edinburgh	34	5.9	3	0.0
University of Glasgow	20	10.0	1	0.0
University of St. Andrews	18	27.8	0	0.0
SPAIN				
Universidad de Barcelona	1	0.0	0	0.0
Universidad Central de España, Madrid	6	16.7	0	0.0
Universidad de Santiago	1	0.0	0	0.0
SWEDEN				
Karolinska Mediko-Kirurgiska Institutet, Stockholm	3	66.7	1	0.0
SWITZERLAND				
Universität Basel	161	35.4	28	42.9
Universität Bern	256	41.8	30	33.3
Universität Zürich	113	37.2	18	38.9
Université de Genève	91	45.1	8	50.0
Université de Lausanne	154	46.8	109	36.7
TURKEY				
University of Istanbul	3	100.0	1	100.0
UNION OF SOCIALIST SOVIET REPUBLICS				
First Leningrad Medical Institute	1	100.0	0	0.0
First Moscow Medical Institute	3	33.3	3	66.7
Kharkov Medical Institute	2	0.0	2	100.0
Kiev Medical Institute	4	75.0	2	50.0
Military Medical Academy, Leningrad	1	100.0	1	0.0
Second Leningrad Medical Institute	6	66.7	2	50.0
Second Moscow Medical Institute	1	0.0	0	0.0
Tomsk Medical Institute	1	0.0	0	0.0
Vinnitsa Medical Institute	2	100.0	1	100.0
Voronezh Medical Institute	3	66.7	0	0.0
YUGOSLAVIA				
Universiteta Zagreb	0	0	1	100.0

Bonn, Heidelberg, Breslau, Budapest, Bologna, Naples, Rome, Basil, Bern, Zurich, Geneva and Lausanne. Also in the five year period there were 315 who presented in lieu of the M.D degree the triple qualification certificate of Scotland. These individuals secured their education in the so-called extramural schools of Scotland.

EXAMINING BOARDS IN THE MEDICAL SPECIALTIES

Examining and certifying boards have been established in fifteen specialties, namely anesthesiology, dermatology and syphilology, internal medicine, neurologic surgery, obstetrics and gynecology, ophthalmology, orthopedic surgery, otolaryngology, pathology, pediatrics, plastic surgery, psychiatry and neurology, radiology, surgery and urology. On authorization of the House of Delegates of the American Medical Association, the Council on Medical Education and Hospitals in 1934 formulated standards governing specialty boards, and these fifteen boards are fully approved by the Council. In addition to regulations relating to the organization and operation of specialty boards, The Essentials of Approved Examining Boards in Specialties contain also the minimum qualifications deemed necessary for certification as a specialist. The latter include graduation from an approved medical school, an internship in a hospital approved by the Council and a period of specialized training in a selected specialty.

Examining Boards in the Medical Specialties

Key No. A. B.	Name of Board	Year of Incorporation	Certificates Awarded: Total Issued to March 1, 1942	Certificates Awarded: March 1, 1943
1.	American Board of Pediatrics	1933	1,784	1,959
2.	American Board of Psychiatry and Neurology	1934	1,251	1,536
3.	American Board of Orthopaedic Surgery	1934	757	819
4.	American Board of Dermatology and Syphilology	1932	607	644
5.	American Board of Radiology	1934	1,639	1,923
6.	American Board of Urology	1935	848	942
7.	American Board of Obstetrics and Gynecology	1930	1,469	1,656
8.	American Board of Internal Medicine	1936	2,692	2,905
9.	American Board of Pathology	1936	830	954
10.	American Board of Ophthalmology	1917	1,979	2,198
11.	American Board of Otolaryngology	1924	3,349	3,570
12.	American Board of Surgery	1937	1,916	2,144
13.	American Board of Anesthesiology	1938	146	188
14.	American Board of Plastic Surgery	1937	127	157
15.	American Board of Neurological Surgery	1940	107	138
	Totals		19,561	21,733

Certification in the subspecialties: By the American Board of Internal Medicine: Allergy 68; cardiovascular disease 260; gastroenterology 122; tuberculosis 119; total 569. By the American Board of Surgery: Proctology 61. Total certified in the subspecialties 630.

The American Board of Internal Medicine by special examination certifies specialists in allergy, cardiovascular disease, gastroenterology and tuberculosis. Similarly the American Board of Surgery certifies specialists in proctology.

During the period of the war the training of young men to meet the requirements of the specialty boards will be greatly curtailed since provision for military deferment beyond the internship will be granted to comparatively few. However, the specialty boards have not lowered their requirements because of war conditions, but the majority of them will grant some credit for military service which will compensate in part for the interruption of planned programs of graduate training by the call of physicians to active service in the armed forces. The policies adopted by the specialty boards vary from the granting of an indefinite amount of credit, to be determined by the evaluation of the experience of individual applicants, to full credit for work done in the surgical division of a regularly constituted army or naval hospital. The Office of the Surgeon General of the Army has announced that men in service eligible for board examinations may request orders to detached duty for the purpose of taking these examinations.

The number of certificates awarded prior to March 1, 1942 and those certified from that date to March 1, 1943, respectively, appear in the accompanying tabulation. On March 1, 1942 there were 19,561 physicians certified by the fifteen specialty boards and, in the following year, 2,172, a total of 21,733 excluding the subspecialties.

In the subspecialties 630 have been registered, namely allergy 68, cardiovascular disease 260, gastroenterology 122, proctology 61 and tuberculosis 119.

The greatest number certified by any one board was the 3,570 physicians certified in otolaryngology since the organization of the board in 1924. In internal medicine 2,905 have been certified and in surgery 2,144. The board in ophthalmology, organized in 1917 and the oldest board in existence, has to date certified 2,198 physicians.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Seventeen states and the District of Columbia have adopted by legislative action basic science requirements underlying the practice of the healing art. These acts provide for certification by a board of examiners in the basic sciences as a prerequisite to eligibility for a license to practice any branch of the healing art, whether the license is to be issued after written examination or on the basis of endorsement of credentials or reciprocity. Connecticut and Wisconsin in 1925 were the first states to enact laws. Very few legislatures were in session in 1942 and no basic science law was enacted during the year. A referendum to create such a law in California in 1942 was defeated. At the recent session of the Tennessee legislature, however, a basic science law was passed which becomes operative during the current year. While the laws of some states include reciprocal agreements, the certificate is obtainable only after examination in the majority of states.

In 1942 basic science boards were in operation in Arizona, Arkansas, Colorado, Connecticut, Florida, Iowa, Michigan, Minnesota, Nebraska, New Mexico, Oklahoma, Oregon, Rhode Island, South Dakota, Washington, Wisconsin and the District of Columbia. These states, together with the year of enactment of the basic science law, are recorded in table 1.

Shown in table 2 are the subjects in which examinations are conducted by the respective states and the District of Columbia. These subjects are specified by statute. The examining boards are not authorized to add any subjects or to refrain from giving examination in any subjects specified in the statute. Tennessee is included in this table. All boards examine in anatomy, pathology and physiology, sixteen examine applicants in chemistry, fourteen in bacteriology, eight in hygiene, two in diagnosis and one in public health.

Statistics presented in the succeeding paragraphs in this section cover the year 1942 and therefore omit reference to the state of Tennessee, which enacted its basic science law in 1943. The data included in the tabulations have been received from the officials of the respective boards. The figures given are presented

TABLE 1.—*States Having Basic Science Laws and Year of Enactment*

Arizona	1936	Nebraska	1927
Arkansas	1929	New Mexico	1941
Colorado	1937	Oklahoma	1937
Connecticut	1925	Oregon	1933
District of Columbia	1929	Rhode Island	1940
Florida	1939	South Dakota	1939
Iowa	1935	Tennessee	1943
Michigan	1937	Washington	1927
Minnesota	1927	Wisconsin	1925

in four groups, namely physicians or medical students, osteopaths, chiropractors and unclassified applicants. In applying for a basic science certificate it is not a requirement in most of the states to mention the school of practice. By checking the biographic and medical student records of the American Medical Association and various directories, it has been possible to determine the profession of the majority of candidates, thus permitting the classification of the number of applicants into the three groups. For some it was not possible to determine the profession represented, and they are tabulated in the unclassified group. In this group it is believed are represented osteopaths, chiropractors, naturopaths and doctors of dentistry.

The basic science boards of seventeen states named in table 3 examined in 1942 a total of 2,235 candidates. Of this number, 1,725 were physicians or medical students, 258 were osteopaths, 24 chiropractors and 215 were placed in the unclassified group. Of all applicants, 22.8 per cent failed. Of the physicians or medical students examined, 14.4 per cent failed, osteopaths 44.6 per cent, chiropractors 62.5 per cent and unclassified 54.9 per cent. Among those who passed, there were

TABLE 2.—*Subjects*

	Examinations Required in							
	Anatomy	Bacteriology	Chemistry	Diagnosis	Hygiene	Pathology	Physiology	Public Health
Arizona	+	+	+	..	+	+	+	..
Arkansas	+	+	+	..	..	+	+	..
Colorado	+	+	+	..	..	+	+	..
Connecticut	+	..	..	+	+	+	+	..
Dist. Columbia	+	+	+	..	..	+	+	..
Florida	+	+	+	..	..	+	+	..
Iowa	+	+	+	..	+	+	+	..
Michigan	+	+	+	..	+	+	+	+
Minnesota	+	+	+	..	+	+	+	..
Nebraska	+	+	+	..	+	+	+	..
New Mexico	+	+	+	..	..	+	+	..
Oklahoma	+	+	+	..	..	+	+	..
Oregon	+	..	+	..	+	+	+	..
Rhode Island	+	+	+	..	..	+	+	..
South Dakota	+	+	+	..	..	+	+	..
Tennessee	+	+	+	..	..	+	+	..
Washington	+	..	+	..	+	+	+	..
Wisconsin	+	..	..	+	..	+	+	..

1,476 physicians or medical students, 143 osteopaths, 9 chiropractors and 97 unclassified. The basic science board of Iowa examined the greatest number of applicants, 436, representing 129 physicians and medical students, 198 osteopaths, 5 chiropractors and 104 unclassified. Of those examined in Iowa, 40.4 failed. The next largest number, 266, were examined in Minnesota, with 18.8 failures. The second greatest number of failures, on the other hand, was in Michigan, 36 per cent. The District of Columbia reported no failures for the year, examining 15 physicians and 1 osteopath.

Osteopaths were examined in Colorado, Connecticut, the District of Columbia, Florida, Iowa, Michigan, Minnesota, New Mexico, Oregon, Rhode Island, Washington and Wisconsin. Chiropractors appeared for examination in six states—Connecticut, Florida, Iowa, Oklahoma, Washington and Wisconsin.

It is the policy of the Arizona board of examiners in the basic sciences to omit the names of applicants who fail examinations, and the law does not require the board to record the professional school of graduation of the examinees. Failures for this state, therefore, are recorded only in the total column.

Ten states issued 304 certificates by reciprocity, endorsement or waiver, and the boards of all states granted 1,725 certificates after examination. The number of successful applicants (2,029), registered by

TABLE 3.—*Applicants Examined, 1942*

	Physicians or Medical Students		Osteopaths		Chiropractors		Unclassified		Total Examined	Passed	Failed	Percentage Failed
	P	F	P	F	P	F	P	F				
Arizona	25	..	..	..	..	..	5	..	43	30	13*	30.2
Arkansas	115	3	0	0	0	0	0	1	119	115	4	3.4
Colorado	88	14	1	3	0	0	6	0	112	95	17	15.2
Connecticut	96	5	4	1	3	1	1	2	113	104	9	8.0
Dist. of Columbia	15	0	1	0	0	0	0	0	16	16	0	0.0
Florida	122	21	4	1	2	5	0	3	158	128	30	19.0
Iowa	106	23	111	87	1	4	42	62	436	260	176	40.4
Michigan	148	68	4	10	0	0	6	11	247	158	89	36.0
Minnesota	211	43	1	1	0	0	4	6	266	216	50	18.8
Nebraska	96	19	0	0	0	0	4	2	121	100	21	17.4
New Mexico	12	0	4	0	0	0	0	1	17	16	1	5.9
Oklahoma	57	1	0	0	0	1	1	0	60	58	2	3.3
Oregon	58	15	0	1	0	0	4	17	95	62	33	34.7
Rhode Island	58	10	1	0	0	0	0	0	69	59	10	14.5
South Dakota	13	2	0	0	0	0	0	0	15	13	2	13.3
Washington	115	25	7	9	1	3	1	1	162	124	38	23.5
Wisconsin	141	0	5	2	2	1	23	12	186	171	15	8.1
Totals—Examined	1,725		258		24		215				2,235	
Totals—Passed	1,476		143		9		97				1,725	
Totals—Failed	249		115		15		118				510	
Percentage Failed	14.4		44.6		62.5		54.9				22.8	

* School of practice undeterminable since names of failures not supplied.

examination, reciprocity, endorsement or waiver, are recorded in table 4. Among the successful candidates were 1,689 physicians, 205 osteopaths, 14 chiropractors and 121 unclassified individuals. Minnesota certified 74 without examination, the greatest number, of whom 60 were physicians, 3 osteopaths and 11 unclassified. Arizona, Florida and Washington have no reciprocal relations. None were certified without examination in Connecticut, New Mexico, Oklahoma and Rhode Island.

Osteopaths were registered in all states except Arizona, Arkansas, Nebraska and Oklahoma, while chiropractors were registered in Connecticut, Florida, Iowa, Michigan, South Dakota, Washington and Wisconsin. Altogether 2,029 candidates received basic science certificates in 1942 in seventeen states, ranging from 16 in New Mexico to 290 in Minnesota.

In table 5 is tabulated the number of candidates examined and certified by basic science boards in sixteen years, 1927 to 1942 inclusive. In 1928, when five boards were functioning, there were 646 physicians examined, of whom 9.3 per cent failed, and 59 other practitioners, of whom 47.5 per cent failed. In 1942, by comparison, 1,725 physicians were examined, of

whom 14.4 per cent failed, and 497 other practitioners, with 49.9 per cent failures.

In the sixteen year period there were 15,307 physicians or medical students examined, of whom 13,437 were successful in their examinations, while in the same period 2,283 other practitioners took the test and 1,115 were successful. Of the physicians examined in this period 12.2 per cent failed to pass, while 51.2 per cent of the other practitioners failed to pass. Since 1927, 3,076 physicians and 571 other practitioners have been certified without examination.

All together during this sixteen year period 18,199 certificates have been granted by basic science boards, of whom 16,513 were physicians and medical students; 1,686 were other practitioners.

TABLE 4.—*Certificates Issued by Examination, Reciprocity and Endorsement, 1942*

	Examination					Reciprocity and Endorsement					
	Physicians or Med. Students	Osteopaths	Chiropractors	Unclassified	Totals	Physicians or Med. Students	Osteopaths	Chiropractors	Unclassified	Totals	Registered
Arizona	25	0	0	5	30	0	0	0	0	0	30
Arkansas	115	0	0	0	115	13	0	0	0	13	128
Colorado	88	1	0	6	95	9	5	0	3	17	112
Connecticut	96	4	3	1	104	0	0	0	0	0	104
District of Columbia	15	1	0	0	16	42	0	0	0	42	58
Florida	122	4	2	0	128	0	0	0	0	0	128
Iowa	106	111	1	42	260	24	0	0	4	28	288
Michigan	148	4	0	6	158	0	6	3	1	10	168
Minnesota	211	1	0	4	216	60	3	0	11	74	290
Nebraska	96	0	0	4	100	6	0	0	0	6	106
New Mexico	12	4	0	0	16	0	0	0	0	0	16
Oklahoma	57	0	0	1	58	0	0	0	0	0	58
Oregon	58	0	0	4	62	13	10	0	0	23	85
Rhode Island	58	1	0	0	59	0	0	0	0	0	59
South Dakota	13	0	0	0	13	7	17	1	0	25	38
Washington	115	7	1	1	124	0	0	0	0	0	124
Wisconsin	141	5	2	23	171	39	21	1	5	66	237
Totals	1,476	143	9	97	1,725	213	62	5	24	304	2,029

TABLE 5.—*Total Candidates, 1927-1942*

	Number of Boards	Physicians or Medical Students Examinations						Other Practitioners Examinations					
		Examined	Passed	Failed	Percentage Failed	Endorsement	Total Certified	Examined	Passed	Failed	Percentage Failed	Endorsement	Total Certified
1927	5	505	279	26	8.5	26	305	22	15	7	31.8	1	16
1928	5	646	586	60	9.3	19	605	59	31	28	47.5	0	31
1929	7	668	610	58	8.7	75	685	66	31	35	53.0	0	31
1930	7	685	606	79	11.5	118	724	78	30	48	61.5	4	34
1931	7	680	586	94	13.8	141	727	107	48	59	55.1	0	48
1932	7	657	590	67	10.2	106	696	78	44	34	43.6	12	56
1933	8	601	527	74	12.3	121	648	60	30	30	50.0	10	40
1934	9	815	725	90	11.0	127	852	51	26	25	49.0	11	37
1935	10	882	761	121	13.7	110	871	74	33	41	55.4	4	37
1936	10	1,032	891	141	13.7	230	1,121	66	26	40	60.6	13	39
1937	12	1,231	1,061	170	13.8	192	1,253	113	41	72	63.7	10	51
1938	12	1,168	1,026	142	12.2	267	1,293	158	70	88	55.7	26	96
1939	14	1,141	1,013	128	11.2	727	1,740	218	97	121	55.5	294	391
1940	16	1,303	1,140	163	12.5	324	1,464	280	153	127	43.9	22	175
1941	17	1,768	1,560	208	11.8	280	1,840	356	191	165	46.3	73	264
1942	17	1,725	1,476	249	14.4	213	1,689	497	249	248	49.9	91	340
Totals		15,307	13,437	1,870	12.2	3,076	16,513	2,283	1,115	1,168	51.2	571	1,686

Basic science legislation has been enacted in an attempt to provide a means of insuring that all applicants seeking licensure to care for sick and injured people shall first possess a reasonable knowledge of the sciences fundamental to the healing art. From the statistics here presented it would appear that the enforcement of such laws affects mostly the group classified as other practitioners.

NATIONAL BOARD OF MEDICAL EXAMINERS

The certificate of the National Board of Medical Examiners is accepted as an adequate qualification for a medical license by the licensing authorities of all but four states, the District of Columbia, the territories of Alaska, Hawaii and Puerto Rico and the Canal Zone. The provisions of the medical practice laws or state board regulations of a few states are such that diplomates of the National Board are required to take an oral examination in Connecticut, Illinois, Maine, Montana, Rhode Island and Wyoming. A brief supplemental written examination is required in Michigan. Pennsylvania requires a rotating internship. The states, territories and possessions which will endorse certificates of the National Board of Medical Examiners are recorded in table 1.

TABLE 1.—*States Endorsing Certificates of National Board of Medical Examiners*

Alabama	Illinois	Nebraska	Rhode Island
Alaska	Indiana	Nevada	South Carolina
Arizona	Iowa	New Hampshire	South Dakota
Arkansas	Kansas	New Jersey	Tennessee
California	Kentucky	New Mexico	Utah
Canal Zone	Maine	New York	Vermont
Colorado	Maryland	North Carolina	Virginia
Connecticut	Massachusetts	North Dakota	Washington
Delaware	Michigan	Ohio	West Virginia
Dist. of Columbia	Minnesota	Oklahoma	Wyoming
Georgia	Mississippi	Oregon	
Hawaii	Missouri	Pennsylvania	
Idaho	Montana	Puerto Rico	

TABLE 2.—*Examinations, 1916-1921*

Date	Total Examined	Failed	Percentage Failed
October 1916	10	5	50.0
June 1917	12	3	33.3
October 1917	28	6	21.5
January 1918	20	2	10.0
April 1918	23	5	26.1
December 1918	16	1	6.3
June 1919	52	1	1.9
February 1920	48	12	25.0
May 1920	60	14	23.3
February 1921	16	5	31.3
June 1921	40	3	7.5
Totals	325	57	14.3

The examinations of the National Board are accepted in lieu of the examinations in these subjects given by the boards of examiners in the basic sciences of Connecticut, Iowa, Minnesota, Nebraska and the District of Columbia.

In the following paragraphs data are presented for the twenty-fifth consecutive year regarding the examinations conducted and the issuance of certificates by the National Board of Medical Examiners. These statistics are based on official reports received periodically from the executive office of the National Board.

Graduates of approved medical schools in the United States and Canada are eligible for certification. Graduates of the university medical schools of Great Britain and Ireland are admitted to the examinations of the National Board provided these graduates have been licensed to practice in the country in which the school is located.

From October 1916 to Dec. 31, 1921 eleven examinations were held and 268 candidates were certified. The results of each examination during this period are given in table 2.

Since 1922 the examination has been divided into three separate parts, which must be taken and completed in the following sequence: Part I, a written examination in each of the six fundamental medical sciences; Part II, likewise a written examination in five major clinical subjects, and Part III, a clinical and practical examination in six major clinical subjects and their component subjects or subdivisions. Examinations in Parts I and II were formerly held in February, June and September at approved medical schools, provided there were at least five candidates available, and the Part III examinations were held at times sufficiently frequent to accommodate all eligible candidates in twenty-three established centers throughout the United States. The usual schedule of examinations in Parts I and II has been changed to accord more nearly with the accelerated curriculum of the medical schools. Examinations during the present year have already been held in January and March. Another examination in these parts will be given in August and again in the month of November. Special examinations in Part III will be held from time to time in centers having a sufficient number of candidates to warrant doing so.

TABLE 3.—*Examinations in Part I in 1942 and 1922-1942*

Date	Total Examinations	Passed	Incomplete	Failed	Percentage Failed
February	282	204	39	39	13.6
June	1,241	768	345	128	10.3
September	342	232	87	23	6.7
Totals	1,865	1,204	471	190	10.2
1922	388	263	58	67	20.3
1923	507	349	77	81	18.8
1924	591	415	69	107	20.5
1925	608	400	50	158	28.3
1926	625	436	104	85	16.3
1927	702	452	159	91	16.8
1928	843	533	231	79	12.9
1929	1,006	675	331	90	11.8
1930	1,260	801	345	114	12.5
1931	1,277	755	425	97	11.4
1932	1,307	847	371	89	9.5
1933	1,234	782	316	136	14.8
1934	1,241	809	347	85	9.5
1935	1,264	785	410	69	8.1
1936	1,344	858	363	123	12.5
1937	1,435	871	415	149	14.6
1938	1,654	986	508	160	14.1
1939	1,733	1,048	460	225	17.7
1940	1,653	1,069	375	209	12.6
1941	1,640	1,087	346	207	12.6
1942	1,865	1,204	471	190	10.2
Totals	24,267	15,425	6,231	2,611	10.7

Although there has been no change in any of the established regulations of the National Board because of the war emergency, in matters pertaining to premedical education, curriculum and internships, the Board is prepared to abide by the recommendations of the Council on Medical Education and Hospitals of the American Medical Association and the wartime changes now in effect in the majority of approved medical schools.

The tables hereinafter presented enumerate the results of examinations in Parts I, II and III for each calendar year since 1922, including those who passed and failed examinations and those certified.

After completing successfully the first two years in an approved medical school, the candidate is eligible for Part I. Candidates are required to take all six subjects of this part at a regular examination period unless entitled to take an incomplete examination or electing to take a divided examination. An incomplete examination is allowed candidates taking Part I at the end of their second year in schools whose third year curriculums include courses in one or two subjects of this part. The examinations in the subject not yet completed are therefore postponed and may be taken at any examination period after the candidate has completed them in his medical school. A candidate not entitled to take an incomplete examination in Part I may, if he so elects, take a divided examination by writing any four subjects at one time and the remaining two within thirteen months, but after at least one semester of study. Those electing to take a divided examination are excluded from these statistical presentations until reported as having passed or failed.

TABLE 4.—*Examinations in Part II in 1942 and 1922-1942*

Date	Total Examinations	Passed	Incomplete	Failed	Percentage Failed
February	127	120	..	7	5.5
May	679	665	..	14	2.0
June	181	166	..	15	8.3
September	85	80	..	5	5.9
Totals	1,072	1,031	..	41	3.8
1922	109	90	0	19	17.4
1923	192	170	2	20	10.5
1924	267	227	0	40	15.0
1925	342	309	0	33	9.6
1926	381	334	1	46	12.1
1927	361	314	1	46	12.8
1928	410	371	1	38	9.3
1929	465	399	19	47	10.5
1930	620	543	7	70	11.4
1931	719	630	2	87	12.1
1932	732	674	0	58	7.9
1933	714	651	0	63	8.8
1934	633	583	0	50	7.9
1935	689	620	0	69	10.0
1936	768	716	2	50	6.5
1937	855	803	1	51	6.0
1938	861	815	0	46	5.3
1939	938	884	0	54	5.8
1940	1,028	963	9	56	5.5
1941	1,001	954	1	46	4.6
1942	1,072	1,031	0	41	3.8
Totals	13,157	12,081	46	1,030	7.9

TABLE 5.—*Examinations in Part III, 1922-1942*

	Total Examinations	Passed	Failed	Percentage Failed
1922	22	22	0	0.0
1923	82	81	1	1.2
1924	126	120	6	4.8
1925	219	206	13	5.9
1926	255	243	12	4.7
1927	293	272	21	7.2
1928	322	306	16	5.0
1929	352	337	15	4.3
1930	420	401	19	4.5
1931	437	419	18	4.1
1932	550	522	28	5.1
1933	551	526	25	4.5
1934	567	548	19	3.4
1935	598	578	20	3.3
1936	576	547	29	5.0
1937	668	630	38	5.7
1938	706	682	24	3.4
1939	770	729	41	5.3
1940	791	770	21	2.7
1941	910	885	25	2.7
1942	1,053	1,040	13	1.2
Totals	10,268	9,864	404	3.9

Between 1916 and 1921 a total of 325 were examined, of whom 268 passed and 57, 14.3 per cent, failed. Total certificates awarded up to and including 1942, 10,132.

A physician is eligible for Part II who has passed Part I and has completed successfully a four year medical course in an approved medical school.

Three examinations in Part I were held in 1942 and four in Part II. The results of these examinations, together with totals for twenty-one years, are included in tables 3 and 4. The figures cover the details of each examination given during a calendar year and

include some who failed and were reexamined during the same year and also some who passed Parts I and II in the same year. They therefore represent examinations conducted rather than individuals examined.

During the past year 1,865 examinations were given in Part I of which 1,204 candidates passed and 190, 10.2 per cent, failed. In 1942 also 471 incomplete examinations in Part I were given. In 1942, 1,072 examinations were held in Part II. There were 1,031 successful examinees and 41, or 3.8 per cent, failures.

Since 1922 a total of 24,267 examinations have been given in Part I and 13,157 in Part II. During this period 15,425 candidates passed Part I and 12,081 passed Part II. In twenty-one years there have been 2,611 failures in Part I, 10.7 per cent, and 1,030 failures in Part II, 7.9 per cent. From 1922 to 1942 inclusive, 6,231 candidates took incomplete examinations in Part I and 46 in Part II.

A candidate is eligible for Part III who has passed Parts I and II, received the degree of Doctor of Medicine and has satisfactorily completed an internship of at least one year in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association or by the Department of Hospital Service of the Canadian Medical Association or has served a year in an acceptable laboratory.

The results of examinations in Part III for the twenty-one year period 1922 to 1942 are given in table 5. In 1942, 1,053 were examined as compared with only twenty-two in 1922. This was the greatest number examined in any one year. Of those examined in 1942, 13, or 1.2 per cent, failed. In twenty-one years 10,268 were examined, of whom 9,864 were granted certificates and 404, 3.9 per cent, failed. Between 1916 and 1921, certificates were awarded 268 candidates. Since the inception of the board in 1916, 10,132 certificates have been awarded. Physicians who earned the certificate are designated Diplomates of the National Board and are privileged to use the designating initials D.N.B.

In table 6 are recorded the number of individuals examined during any one year. The classification of passed or failed in cases in which more than one examination has been taken in a given year was based on the results of the last examination during the year in question. For example, if in 1942 a candidate passed Part I but later in 1942 failed Part II he is computed in the tabulation as having failed. On this basis figures computed indicate there were 3,607 who took at least one of the examinations of the National Board in 1942 as compared with 525 in 1922. A total of 44,095 individuals was examined in one or more of the examinations in the twenty-one years shown, of whom 34,657 passed, 5,910 took incomplete examinations and 3,528, 8 per cent, failed.

Physicians certified as Diplomates in 1942 numbered 1,040, representing graduates of fifty-three medical schools in the United States, one school now extinct, two in Canada and 50 graduates of faculties of medicine abroad. Table 7 records the number of Diplomates from each school certified last year.

Diplomates licensed to practice medicine on the basis of their credentials increased from two in 1917 to 702 in 1942, 7,572 having been so licensed since the National Board was formed. However, 10,132 have received the certificate of the Board. In 1942 Diplomates were licensed on the basis of their National Board certificate in forty-one states, the District of Columbia and Hawaii. The number so registered in each state is recorded in table 8.

TABLE 6.—*Parts I, II and III, Excluding Duplications, 1922-1942*

	Total Examined	Passed	Incomplete	Failed	Percentage Failed
1922	525	381	58	86	18.4
1923	775	594	79	102	14.7
1924	978	756	69	153	16.8
1925	1,167	915	50	202	18.1
1926	1,161	930	105	126	11.9
1927	1,248	947	142	159	14.4
1928	1,430	1,101	211	118	9.7
1929	1,723	1,280	319	124	8.8
1930	2,044	1,547	322	175	10.2
1931	2,218	1,632	410	176	9.7
1932	2,342	1,850	355	137	6.9
1933	2,277	1,806	280	191	9.6
1934	2,261	1,801	330	130	6.7
1935	2,368	1,831	408	129	6.6
1936	2,517	1,989	353	175	8.1
1937	2,735	2,151	397	187	8.0
1938	2,992	2,308	493	191	7.6
1939	3,221	2,476	443	302	10.9
1940	3,188	2,597	363	228	7.1
1941	3,318	2,749	332	237	7.1
1942	3,607	3,016	391	200	5.5
Totals	44,095	34,657	5,910	3,528	8.0

TABLE 7.—*Diplomates from Individual Medical Schools, 1942*

University of Arkansas	3	Albany Medical College	35
College of Medical Evangelists	53	Columbia University	25
Stanford University	4	Cornell University	21
University of Colorado	5	Long Island College of Med.	35
Yale University	39	New York Medical College	65
George Washington University	22	New York University	25
Georgetown University	40	Syracuse University	8
Howard University	1	University of Buffalo	63
Emory University	1	University of Rochester	15
Loyola University	6	Duke University	51
Northwestern University	21	University of Cincinnati	1
University of Chicago	7	Western Reserve University	1
University of Illinois	4	University of Oregon	2
State University of Iowa	20	Hahnemann Medical College	2
University of Kansas	8	Jefferson Medical College	4
University of Louisville	2	Temple University	9
Louisiana State University	1	University of Pennsylvania	14
Tulane University	7	Woman's Medical College	6
Johns Hopkins University	10	Meharry Medical College	2
University of Maryland	6	Baylor University	1
Boston University	36	University of Texas	1
Harvard Medical School	122	University of Vermont	22
Tufts College Medical School	88	University of Virginia	1
University of Michigan	3	Marquette University	13
University of Minnesota	8	McGill University	16
St. Louis University	6	University of Toronto	1
Washington University	5	Extinct Medical School	13
Creighton University	9	Foreign	50
University of Nebraska	1		
		Total	1,040

TABLE 8.—*Licenses Granted on the Basis of National Board Certificates, 1942*

Alabama	6	Nevada	1
Arizona	3	New Hampshire	10
Arkansas	2	New Jersey	33
California	48	New Mexico	3
Colorado	4	New York	189
Connecticut	36	North Carolina	13
District of Columbia	28	North Dakota	4
Georgia	4	Ohio	23
Idaho	1	Oklahoma	2
Illinois	20	Oregon	5
Indiana	6	Pennsylvania	22
Iowa	7	Rhode Island	6
Kansas	2	South Carolina	1
Kentucky	5	South Dakota	2
Maine	11	Tennessee	5
Maryland	20	Vermont	5
Massachusetts	111	Virginia	12
Michigan	11	Washington	7
Minnesota	11	West Virginia	1
Mississippi	1	Hawaii	4
Missouri	11		
Montana	3	Total	702
Nebraska	3		

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SATURDAY, MAY 8, 1943

PROVISION OF MEDICAL SERVICE IN CRITICAL AREAS

At a meeting of the War Participation Committee of the American Medical Association with the directing board of the Procurement and Assignment Service for Physicians, Dentists and Veterinarians and with representatives of the United States Public Health Service in Washington on Dec. 14, 1942, plans were presented whereby the United States Public Health Service could meet the need for medical services in critical areas. The War Participation Committee of the American Medical Association at that time recommended that state medical societies cooperate with the State Procurement and Assignment Service and with the state boards of registration and licensure in determining areas that lack medical services and in developing plans for medical services in such areas when the need arises. The Secretary of the American Medical Association, Dr. Olin West, was requested to inform the secretaries of all state medical associations of the action taken. The Board of Trustees endorsed the activities of the War Participation Committee in this regard. In the meantime various measures have been taken in different areas to meet critical situations, and in others plans have been developed for the future. These are as follows:

1. In some communities, local medical groups and health agencies have endeavored to arrange conditions so that the remaining physicians may extend their services as far as possible. Additional nurses for home visits and bedside care, when they can be secured, are of great value in conserving the time and energy of physicians. Additional hospital beds, clinics and health centers when they can be obtained greatly relieve many situations.

2. In most instances in which there is a real shortage of medical care, it is necessary for the State Procurement and Assignment Service to undertake to find physicians who can be spared from some communities within the state and persuade them to relocate in others where they are needed more.

3. When a sufficient number of physicians cannot be induced to relocate in needy communities at their own expense, it is recommended that the Public Health Service be enabled to defray costs of moving and transportation within prescribed limits and if necessary to pay a stipend for a period not to exceed three months to enable the physician to establish himself and acquire sufficient practice to provide his living expenses.

4. When a serious shortage of physicians still exists in spite of all efforts to extend medical services to those in dire need, it is recommended that the Public Health Service be enabled to assign physicians to assist in the medical care of the citizens of such areas under the following conditions:

(*a*) That such assignments be made only on official request of the state and local agencies which are responsible for the provision of such service.

(*b*) That Public Health Service physicians so assigned be attached to the state and local agencies charged with the responsibility of rendering medical services and that their activities be conducted in accordance with the laws of the state.

In order to determine areas in which there is a critical shortage of physicians and to ascertain what action may be needed, the Procurement and Assignment Service of the War Manpower Commission, with the assistance of the Public Health Service, has initiated a plan for surveying areas reported to have a medical care shortage. These surveys are made jointly by the State Procurement and Assignment Service and the Public Health Service, with the cooperation of the state health department and the state medical and dental societies.

There seems to be general agreement on the view that a ratio of 1 physician to 1,500 people is deemed desirable as a national average. Since, however, it will not be possible to secure such a ratio in all places, the absolute minimum that should be allowed to exist in war industry and military areas is to be 1 physician for each 3,000 people. Moreover, there are desperate situations in some agricultural areas because most of the effective physicians have left communities to join the armed forces. In order to permit the United States Public Health Service to carry on this work, the Surgeon General has estimated that some 59 physicians and 5 dentists will be needed to relieve existing and anticipated medical and dental care shortages in some forty-two areas. Thus far the United States Public Health Service has been requested to supply or to assist in supplying 13 physicians and 2 dentists, or approximately one fourth of the determined need. It is recognized that this activity of the United States Public Health Service is one for the emergency only, and it

is not contemplated that the service will be further extended either for the emergency or in the postwar period in the field of medical care. Certainly the medical profession, including the regularly organized state and county medical societies, will do its utmost to cooperate with governmental agencies in making certain that the people of our country, and particularly those who have been dislocated into military and industrial areas to meet war needs, are provided with medical care.

DURATION OF PREGNANCY

Recent regulation changes by which the classification of registrants is to be established under the Selective Service System provide for a distinction between (1) men with child (or children) with whom they maintain a family relationship in their homes, provided such status (child) was acquired prior to Dec. 8, 1941, and (2) men with wives only or with child (or children) acquired after Dec. 8, 1941. As a result of these provisions it will become necessary for local Selective Service boards to determine beyond reasonable doubt in certain borderline instances whether a child has been conceived before or after Dec. 8, 1941 in order to classify the registrant correctly.

Many reports have a bearing on this problem. Wahl [1] studied a series of 9,000 women to determine the length of pregnancy. He found that the average duration of gestation was 285 days, which is contrary to commonly quoted figures of 280 days. As pointed out by Schwarz,[2] pregnancy actually begins the moment the female egg cell becomes fertilized and ends with the birth of the child. The time estimated as the length of pregnancy is difficult to determine on account of several variable factors: (1) the question of the time of ovulation, (2) the time of migration, (3) the lifetime of the egg and the spermatozoa, (4) the time of impregnation and (5) the time of implantation of the ovum.

The Hotellings,[3] who analyzed over 2,000 obstetric cases at the Stanford University Clinic, came to the following conclusions: "The conclusion of the earlier writers that 280 days is the average duration of normal pregnancy, that is, when the very short and very long durations are excluded, is confirmed by our study. However, the standard deviation from this average, which other students have estimated to be from 8 to 10 days, we find to be 11 days. If the early births are included, the mean duration is shorter and the standard deviation greater. The mean duration from the date of coitus to birth is 271 days, the standard deviation being scarcely any less than when duration is counted from the beginning date of the last menstruation. The standard deviation also seems to be no less when duration is counted from the last day of the last menstruation, as in England and France. Accordingly, there is no perceptible gain in accuracy by reckoning even from a single coitus of known date, unless, of course, the menstruation date is unknown."

The longest possible period of gestation has not been legally defined in this country. French law recognizes the legitimacy of a child born 180 days after marriage and 300 days after the death of the husband, the German law 181 and 302 days respectively. In England in 1921 the legitimacy of a child born 331 days after the husband went to war was allowed. In the United States each case is decided on its own merits, since there is no law in this country or in England which defines the duration of gestation.

The problem is further complicated by the fact that there are no accurate criteria for ascertaining the degree of hypermaturity of newborn infants; even fully formed teeth are sometimes found in those born at term. It can only be said that the weight of the newborn child when evaluated against the size of the parents and parity of the mother can be highly suggestive.

For practical purposes the burden of proving any pregnancy lasting more than 280 days would seem to rest on the claimant. Under such circumstances the claimant would be charged with presenting overwhelming medical evidence of the prolonged nature of the gestation. Any child born after Sept. 15, 1942 could therefore not be considered as having been conceived before Dec. 8, 1941 in the absence of overwhelming evidence to the contrary.

THE DISTRIBUTION OF PHYSICIANS AND STATE LICENSING LAWS

A perfect distribution of physicians based exclusively on the distribution of population can perhaps be obtained only in a totalitarian state, although neither the Germans nor the Russians seem to have solved the problem. One may suspect that even then it would be satisfactory only to the dictatorial régime and probably not to the medical profession or to the population itself. The distribution of physicians in the United States before the war no doubt left much to be desired; the war itself has accentuated the problem. Withdrawal of large numbers of doctors for federal services, shifts of masses of people to new locations, difficulties of transportation of doctors and patients, and crowding of hospitals are some of the newer aspects of the situation. As a result, a number of areas of real medical scarcity have developed.

This problem of relocation encounters many difficulties, one of which is the legal restraints imposed by the various state licensing laws. The suggestion that a federal emergency license good in any state is the solution has met many obvious objections. The directing board of the Procurement and Assignment Service held a joint meeting with the Executive Committee of the Federation of State Medical Boards on Dec. 10,

1. Wahl, F. A.: Deutsche med. Wchnschr. **63**: 125 (Jan. 22) 1937.
2. Schwarz, O. H.: The Diagnosis of Pregnancy, in Obstetrics and Gynecology (Curtis), Philadelphia, W. B. Saunders Company, 1933, vol. 1, p. 671.
3. Quoted by Schwarz.[2]

1942 and agreed to certain principles, which have been communicated to the licensing bodies of each state. These include procedures for determining the need of relocations of physicians. As far as possible relocations are to be accomplished by utilizing physicians already licensed within each state. When help from outside the state is necessary, full advantage should be taken of existing provisions for reciprocity between states and for interstate endorsement. Whenever existing laws make these measures impossible, a change in the law permitting temporary licenses during the emergency may be enacted, and a draft of such a law to serve as a model was provided. This model law contains restrictions of the right to practice, as regards both time and place. Finally, arrangements have been made with the United States Public Health Service whereby, when other efforts have proved unsuccessful and certain conditions required by the restrictions placed on the United States Public Health Service are met, that service may aid in supplying doctors to meet the necessities of the situation.

Two principal objects are sought: first is the best distribution of our available resources of medical personnel and the health protection of the largest number of people; second is the doing of this in such a way as to preserve the rights and advantages that inhere in local self government. A breaking down of the right of each state to determine for itself the standards of medical licensure and practice within its borders cannot be contemplated with indifference, even under the plea of war necessity. It may distress the judicious that one state may allow practice by those who are improperly qualified or that another may exclude excellent men by peculiar requirements. A uniformly sound standard of eligibility, and general reciprocity, in regard to licensure is desirable. It seems wiser, however, to reach this desirable goal by the natural evolution of experience and education than to substitute federal control.

AMINOACRIDINE COMPOUNDS AS SURFACE ANTISEPTICS

No doubt the discovery that sulfonamide compounds act locally as antiseptics served to revive the almost extinguished interest in local antisepsis. Of the newer antiseptics gramicidin and penicillin appear to possess a striking antiseptic action; the effect of propamidine in chronic wound infection was recently commented on in THE JOURNAL.[1] In a recent issue of the *British Medical Journal* Browning[2] calls attention anew to the flavines. As early as 1913 Browning and Gilmour demonstrated that the action of the diaminoacridine compounds, in contrast to all other efficient antiseptics, is intensified rather than reduced when the medium contains serum. Toxic damage from acriflavine or proflavine absorbed from wounds has not occurred. True necrosis may occur at the site of injection of flavines into closed tissues if the flavines are used in high concentrations. Russell and Falconer[3] showed that 1:1,000 solution of proflavine and 2:7 diaminoacridine in isotonic saline solution buffered at the p_H of 6.2 were harmless when applied to rabbit's exposed brain tissue, while acriflavine 1:1,000 and euflavine 1:2,000 caused hemorrhage and necrosis.

Considerable disparity appears in the studies of various investigators on the inhibitory effect of acridine compounds on the phagocytic activity of the leukocytes. Successful results with acridine compounds have been obtained repeatedly in recent wounds of mice inoculated with streptococci. After intraperitoneal inoculation of virulent streptococci, one intraperitoneal injection of the antiseptic after an hour's interval saved the lives of 60 per cent of the animals. Browning therefore concludes that it is possible to destroy infection in a freshly infected wound by the use of an antiseptic. There is also convincing clinical evidence that the flavines can control established suppuration in wounds and that this may occur in instances in which drugs of the sulfonamide group have failed. Continued use of the flavines, however, leads to retardation of granulation and healing so that it may be advantageous to change to other treatment later.

In the same issue of the *British Medical Journal*[4] the reason for the failure of acridine compounds in the past is said editorially to be explained by the wrong choice of compound and misapplication. Thus acriflavine, which has been most popular in the past, was recently demonstrated to be least satisfactory. Recent researches show proflavine to be the compound of choice as an efficient wound antiseptic, probably superior to the sulfonamides in the presence of gas gangrene. The introduction by Mitchell and Buttle[5] of the use of proflavine in powder form in treatment of wounds did away with one of the drawbacks common to all acridines when applied as solutions, namely their affinity for fabrics, which interfered with their diffusion into the tissues of the wound. The scarcity of penicillin and certain limitations of the sulfonamides make it desirable to investigate further the possibilities of the acridine compounds, in particular proflavine.

1. Propamidine in Chronic Wound Infection, editorial, J. A. M. A. **121**: 946 (March 20) 1943.
2. Browning, C. H.: The Present Status of Aminoacridine Compounds (Flavines) as Surface Antiseptics, Brit. M. J. **1**: 341 (March 20) 1943.
3. Russell, Dorothy S., and Falconer, M. A.: Antiseptics in Brain Wounds: An Experimental Study of the Histological Reaction of Cerebral Tissues to Various Antiseptic Solutions, Brit. J. Surg. **28**: 472 (Jan.) 1941.
4. The Rehabilitation of the Flavines, editorial, Brit. M. J. **1**: 355 (March 20) 1943.
5. Mitchell, G. A. G., and Buttle, G. A. H.: Proflavine Powder in Wound Therapy, Lancet **2**: 416 (Oct. 10) 1942.

Current Comment

STATE BOARD NUMBER

The exceeding importance of making available at the earliest possible moment the facts regarding medical licensure in the United States has made it necessary for THE JOURNAL to publish the State Board Number at this time although somewhat abbreviated. The restrictions on the use of paper made it simply impossible to include many of the large tables which are usually incorporated in this number. However, the facts here included provide practically all the essential information that is usually incorporated in the issue devoted particularly to the results of the state board examinations. The Council on Medical Education and Hospitals will make available in the form of a reprint the usual full report for those who are especially desirous of having the more detailed statistics.

MATERIALS USED FOR PHARMACEUTIC PURPOSES EXEMPTED

Under an order released by the Office of Price Administration on April 29, by-products of animal slaughtering operations used only for pharmaceutic or nonfood purposes were expressly exempted from the meats and fats rationing regulations. This order, effective May 5, excludes adrenal glands, bile, epididymides, lymph glands, ovaries, parathyroid glands, pineal glands, pituitary glands, placentas, prostate glands, salivary glands, thyroid glands and tonsils from the definition of rationed meat. It will be observed that liver has not been exempted, notwithstanding the fact that already producers are confronted with a definite shortage of liver for pharmaceutic purposes. During recent years the utilization of liver for the manufacture of materials related to the control of anemia and for vitamin B complex and similar purposes has been greatly extended, so that the amounts now required are far beyond what would have been needed in either 1941 or 1942. Attention must be called, incidentally, to an extraordinary release from the Office of War Information announcing the action taken by the Office of Price Administration. Apparently the Office of War Information is completely without scientific medical advice in the preparation of its releases, since the statement could never have been made by any one with even a modicum of medical information. The release from the Office of War Information reads:

> Over and above the actual meat for food which is lost to legal trade, OWI said, strategic by-products are wasted such as materials from which are derived surgical sutures, adrenalin and vital insulin. Sutures are used surgically in the drawing together of the edges of a wound, which is sewn with gut-thread. Adrenalin is a powerful drug obtained from the adrenal glands of animals and is used to check hemorrhage and as a hypodermic injection to check pressure and stimulate the heart. Insulin, among its other applications, is used to retard the formation of sugar in the blood of diabetics.

Who could possibly have informed the Office of War Information that adrenalin is used "as a hypodermic injection to check pressure" or that "insulin . . . is used to retard the formation of sugar in the blood of diabetics"? What a pity that the opportunity for public education in matters related to medicine and health offered to the Office of War Information by the new regulations should not have been utilized to the utmost advantage by the issuing of information with a reasonable amount of accuracy. For the information of the Office of War Information, adrenalin does not "check pressure" but raises the blood pressure. Insulin does not "retard the formation of sugar in the blood" but restores the ability of the human body to use sugar and fat in the normal manner, enabling the body to burn more sugar in the cells in its tissues.

WAR PRODUCTION BOARD RELAXES RESTRICTIONS ON SCALES

By an action of the War Production Board dated April 29, baby scales will be produced at one fourth the 1941 rate but will be sold to the public only on the prescription of a physician. Previously the production of baby scales for household use had been banned except for clinical type scales made for sale to physicians and hospitals on A-9 ratings. The partial easing on restrictions of production covering household baby scales was necessitated by several factors, most important of which was the complete exhaustion of all supplies because of the growing demand which resulted from the phenomenal increase in the birth rate. Under the new order the sale of baby scales to doctors, hospitals, distributors and dealers is permitted without restriction. Manufacturers may produce only one model, and that model must be the one made in 1942 which used the least amount of steel. The use of copper and brass is completely prohibited, and metal cannot be used for making the tray. Fiber, paper board, plastics, wicker or cane may be used for the tray. It is anticipated that the saving resulting from these restrictions will hold down the consumption of steel for baby scales to not more than one eighth of the amount used in 1941. Physicians will, of course, give utmost cooperation to the War Production Board in the issuing of prescriptions to their patients for the purchase of these scales. Such cooperation will require that a prescription be not issued except under circumstances in which it becomes impossible for the family to utilize a scale available in the neighborhood or which can be borrowed from any available source. Presumably also physicians will recommend the use of scales only when considered necessary in relationship to routine care of an infant requiring constant study of the weight in relationship to suitable growth. At the same time that the War Production Board authorized the manufacture of baby scales, an order was issued restoring production of dietetic scales used by persons whose diet is under a physician's control to the 1941 levels. These scales also may be sold only on prescription by a physician. The prohibitions on the production, repair and maintenance of scales for household use have been relaxed to the extent that parts may be used for rebuilding used commercial scales into baby weighing scales. Again it should be emphasized that the position of the civilian physician in the war effort is one of the most

responsible and important of any type of professional service rendered to the public. Never before have so many responsibilities been placed even on the physician. Already he has shown in the war effort that the ethics and honor of the profession warrant the belief that he will exercise his functions in the high tradition of the past.

THE ROCKEFELLER FOUNDATION IN 1942

The review of the work of the Rockefeller Foundation in 1942 presented by Raymond B. Fosdick [1] records appropriations of over eight million dollars, over half spent in the fields of public health and medical sciences. Of special interest to the medical profession is the work of the foundation in yellow fever. Today, principally as the result of the work of the foundation, few of our soldiers or sailors need to be victims of yellow fever. Our troops in Liberia and other parts of Africa where yellow fever is endemic are now protected by vaccination from the consequences of this savage disease, with its mortality ranging in some localities as high as 70 per cent. During 1942 much attention was given to an outbreak of jaundice which appeared to be associated with certain definite lots of yellow fever vaccine. In preceding years nearly eight million vaccinations had been successfully administered without disturbing consequence except for a few cases of jaundice in Brazil. Research during 1942 indicated that the incidental jaundice which is not contagious and does not constitute a danger to public health is probably due to a virus in the human serum component employed in the vaccine. Oddly enough, cases of jaundice appeared in England and Russia, apparently following the administration of vaccines or serums which were manufactured in those countries for diseases other than yellow fever and which also contained a human serum component. Now yellow fever vaccine is being successfully made without this component. Fosdick's report mentions also the research being developed in the laboratories of the foundation and elsewhere on synthetic drugs designed to replace the now scarce quinine. The foundation has also supported psychiatric studies, medical education, research in the biologic sciences, the training of British medical students in the United States and various important programs in the humanities and the social sciences. The contributions to various abortive movements and executive secretaries concerned with fermenting changes in the nature of medical practice seem somewhat out of harmony with the nature or previous practices of this foundation. Because of the disastrous effects of wartime inflation, the work of the foundation as well as of other American agencies in China has deteriorated rapidly and has reached a critical stage. As Fosdick suggests and as the work of the foundation is designed, even a relatively small sum may be used effectively to help build a bridge between what men have valued in the past and what they hope to maintain in the future.

1. Fosdick, R. B.: The Rockefeller Foundation, A Review for 1942, New York, 1943.

RHEUMATIC FEVER IN CHILDREN

The serious character of rheumatic fever as a cause of heart damage to children, and indeed as a cause of death, has made it desirable to refocus medical attention on this disease. Rheumatic fever now ranks among the leading causes of disability and is generally recognized as an important public health problem in this country. The states of Michigan, Iowa, California and Rhode Island, the District of Columbia, Cincinnati and Chicago make this disease reportable. For other sections of the country accurate statistics are not, therefore, available. Nevertheless there is evidence that the death rates in certain areas are exceedingly high, notably in New York, Pennsylvania, New Jersey and Delaware as well as in Idaho, Montana, Colorado and Utah. With a view to aiding the movement toward better recognition and control of this condition, the Metropolitan Life Insurance Company has issued a pamphlet on rheumatic fever in general which has been approved by the American Heart Association, the American Academy of Pediatrics, the United States Public Health Service and the Children's Bureau of the Department of Labor. In the development of the pamphlet some seventeen authorities cooperated with the medical director of the company and its medical staff. The booklet, which is distributed without cost to practicing physicians, provides a complete consideration of the most recent information on the subject, a bibliography and five appendixes with methods of examination, laboratory tests, outlines for classifications of murmurs and outlines of the activities in which patients may indulge. Already several state medical societies have arranged to place it in the hands of all their members.

UNIFORM DEFINITIONS OF MOTOR VEHICLE ACCIDENTS

Comparative figures on motor vehicle accidents occurring in different areas have been difficult to obtain chiefly because of variations in the use and interpretation of definitions by the various official and unofficial agencies involved. In an attempt to meet this problem the Committee on Definitions of the National Conference on Uniform Traffic Accident Statistics under the chairmanship of Dr. Halbert L. Dunn, chief statistician for vital statistics of the Bureau of the Census, has prepared a manual [1] of uniform definitions. This manual defines such terms as "fall from motor vehicle," "injury to nonoccupants," "street wear and tear" and "terminating on a trafficway." The standards set up should be determined by individual agencies and organizations to suit their specific purposes, but in order to secure uniformity in the published data the provisions of this manual should be rigidly followed in the classification of motor vehicle accidents for general publication purposes. The desirability of following these recommendations is manifest.

1. Dunn, H. L., and Moriyama, I. M.: Uniform Definitions of Motor Vehicle Accidents, U. S. Department of Commerce, Bureau of the Census, United States Government Printing Office, Washington, 1943.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war and such other information and announcements as will be useful to the medical profession.

ARMY AND NAVY MEDICAL TRAINING PROGRAM

Official Announcement on Details of Army and Navy Programs for Training Medical Students

ARMY PROGRAM FOR STUDENT TRAINING

In order to assure the Army the annual loss replacements for medical, dental and veterinary officers, the Army Specialized Training Division has been directed to train a sufficient number of enlisted men, who, on receipt of the appropriate degree in medicine, dentistry and veterinary medicine, may be appointed in the Medical, Dental or Veterinary Corps, Army of the United States. Such training will include both a preprofessional and a professional phase and as far as possible will be continuous. To this end, basic military training will not be required of enlisted men of the Enlisted Reserve Corps who are bona fide preprofessional and professional students and who, when called to active duty, are finally selected for premedical or medical training under the Army Specialized Training Program. Basic military training will be, however, required of all other groups.

Enlisted Men

Enlisted men recommended by Army Specialized Training Program Selection Boards for assignment for such preprofessional or professional training, at any level, must be thoroughly qualified as regards fitness and aptitude for subsequent professional training. Their scholastic ability likewise must be such that attrition in both the premedical and medical phases will be held to a minimum.

Students in Medical Administrative Corps

There are now in approved schools of medicine, dentistry and veterinary medicine approximately 22,000 students who hold commissions in the Medical Administrative Corps, A. U. S., or in the Officers Reserve Corps and who are on an inactive status for the purpose of completing their professional training with a view to appointment in the Medical, Dental or Veterinary Corps, A. U. S. The discharge of these students, at their own request, from their commissions and their enlistment in the Enlisted Reserve Corps has been authorized. Students so enlisted will be ordered to active duty at the end of the academic period which terminates between April 15 and June 30, 1943 or, if the academic period continues beyond the latter date, on June 30, 1943. Orders calling such enlisted men to active duty will be issued fifteen days prior to termination of the academic period or June 30, 1943, whichever is applicable. These students will be invited to submit letters of resignation for the purpose of enlistment in the Enlisted Reserve Corps.

Contracts will be requested with all approved schools effective not later than the beginning of the next academic term which ends before June 30, 1943.

ROTC Students

First and second year advanced course ROTC medical students who hold commissions in the Medical Administrative Corps, A. U. S., or in the Officers Reserve Corps and who resign their commissions and enlist in the Enlisted Reserve Corps will be called to active duty as prescribed. Those not in the Enlisted Reserve Corps may be voluntarily inducted for subsequent transfer to the Enlisted Reserve Corps and call to active duty.

Assignment of Students

Medical, dental and veterinary students in good standing in approved schools of medicine, dentistry and veterinary medicine, not under Army jurisdiction, if inducted under Selective Service subsequent to June 30, 1943, will be assigned with the least practicable delay to the Army Specialized Training unit at the institution in which currently matriculated.

The total number of college students pursuing approved premedical, predental and preveterinary courses is greatly in excess of the capacity of approved schools of medicine, dentistry and veterinary medicine. It is emphasized that these trainees are soldiers assigned for university training rather than "students in uniform." Premedical, predental and preveterinary students in the Enlisted Reserve Corps will be called to active duty and assigned to an appropriate Specialized Training and Reassignment unit for classification and reassignment. Enlisted men recommended by selection boards at specialized training and reassignment units for continuation of their preprofessional training or for professional training will at the proper time be assigned to an appropriate Army Specialized Training Unit. Those not recommended for such training will be assigned to an appropriate replacement training center for the completion of the required period of basic military training or, for those not recommended for any phase of Army Specialized Training to an appropriate unit or installation within the territorial limits of the service command.

Induction Under Selective Service

Premedical and predental students only, not in the Enlisted Reserve Corps, if inducted under Selective Service subsequent to the end of the academic period which terminates prior to June 30, 1943 or, if the academic period continues beyond this date, subsequent to June 30, 1943, reporting at reception centers, will, if they attain a score of 115 or better on the Army General Classification Test, be transferred to a Medical Department Replacement Training Center if practicable or to an appropriate installation within the geographic limits of the service command for basic military training. Such men will be designated as candidates for the Army Specialized Training Program. They will there appear before the Army Specialized Training Program field selection board for selection or rejection for the Army Specialized Training Program. Enlisted men who have completed the required preprofessional schooling and have been recommended for professional training by the Army Specialized Training Program selection board at a Specialized Training Assignment and Reclassification unit, but for whom there are no appropriate immediate vacancies in contracting schools of medicine, dentistry and veterinary medicine, will be assigned to a Medical Department Replacement Training Center and/or to other service command installations, preferably with the Medical Department, pending assignment to a suitable unit within prescribed quotas, for professional training.

The procedures for the selection of enlisted men for assignment for training in medicine, dentistry and veterinary medicine under the Army Specialized Training Program will be no less thorough and exhaustive than those now in common usage for acceptance for admission to the accredited professional schools throughout the country.

NAVY PROGRAM FOR STUDENT TRAINING

Medical students who at present hold commissions as Ensigns H-V(P), USNR, have the option of remaining on inactive duty in their present status until completion of their course in medical school at their own expense, or they may resign their commission and enlist as Apprentice Seamen, U. S. Naval Reserve, and be placed on active duty with pay, uniforms and a per diem allowance to defray the cost of their subsistence. The tuition will be paid by the Navy, including the cost of books and the cost of renting microscopes or other equipment necessary in the medical courses.

Entering Students

Students who are now in medical school, or those who have been accepted to the next entering classes, who are Ensigns H-V(P), USNR, will continue in these schools. On satisfactory completion of the prescribed course of studies, the students will be commissioned in the Naval Reserve as Lieutenants (junior grade) MC-V(G) on an inactive duty status to complete one year of internship in a civilian hospital. Those students who desire to enter the Medical Corps of the regular Navy and successfully pass the examination will be assigned to an internship in a naval hospital, on active duty.

If the student fails to maintain satisfactory standards on active duty in the Navy College Training Program, he may be assigned to general duty in enlisted status in the rating for which qualified. The pay of Apprentice Seamen on active duty, without dependents, is $50 per month. Certain allowances are made for the dependents of an Apprentice Seaman on active duty contingent on the allotment by the man concerned of a portion of his pay to his dependents. The amounts of the allowances depend on the number and relationship of the dependants.

Ensigns

Married Ensigns H-V(P), USNR, are eligible for enrolment and participation in the Navy College Training Program. The maximum age restrictions prescribed for other Apprentice Seamen in the Navy College Training Program are not applicable to former Ensigns H-V(P).

Former Ensigns H-V(P) who enlist and who are attending medical school on or about July 1, 1943 will be ordered to active duty at the school which they are attending at that time. Navy medical students in the Navy College Training Program will pursue an accelerated course. While on active duty in school, medical students will wear a Midshipman or Cadet type uniform with suitable distinguishing insignia.

Applications for appointment as Ensigns H-V(P), USNR, from civilian students in medical school, or those students who have been accepted for admission to the next entering class of an approved school, will not be accepted after June 1, 1943. Thereafter qualified students who are in attendance at or who have been accepted by an approved medical school will, on approval by the Bureau of Medicine and Surgery and the Bureau of Naval Personnel, be inducted as Apprentice Seamen, Class SV-12 (S), for training in the Navy College Training Program.

Premedical Students

Premedical students assigned to colleges and universities participating in the Navy College Training Program will be made up mostly from premedical students who now hold an enlisted rating in class V-1 or V-7, USNR. A small percentage of premedical students will be taken from the successful applicants who passed the test given on April 2, 1943 in all high schools and colleges in the country. Tests will be given again in November 1943 and in March 1944.

Premedical students formerly in class V-1 and V-7, on active duty in the Navy College Training Program, who are not selected for medical training by the Navy but who are acceptable to an approved medical school, may submit request to the Bureau of Naval Personnel for discharge. Each such request will be considered on its own merits. If not acceptable to an approved medical school, such men will be considered candidates for other officer candidates training in which qualified.

The course of studies for premedical students entering the first term on July 1, 1943 will run for five terms of sixteen weeks each. It is proposed to screen premedical students after the first year of their studies. The successful students will continue their course until completion; the failures will be allowed to continue the term they are in at the time of failure and then be assigned other training. It is the intention of the Navy Department that Naval trainees, pursuing a premedical course and later assigned to medical schools, be acceptable to the schools to which ordered.

CIVILIAN DEFENSE

CIVILIAN DEFENSE AFFILIATED MEDICAL UNITS

The following resolution has been passed by the Directing Board of the Procurement and Assignment Service:

As a measure of protection for the civilian population in case of enemy action, the United States Public Health Service in cooperation with the Medical Division, Office of Civilian Defense, has invited selected hospitals and medical schools to organize affiliated units of physicians in accordance with a specific table of organization. The physicians of these units are asked to accept reserve commissions in the U. S. Public Health Service on an inactive status with the understanding that they will be called to active duty only for the following purposes:

1. To provide medical care for civilians who must be moved out of their communities of residence as the result of enemy action.
2. To provide temporary medical care in extreme emergency for military personnel in extemporized hospitals in the area.

Affiliated units will be called to active duty only on the recommendation of the respective state chiefs of Emergency Medical Service. In selecting units for activation, the state chiefs will call on those physicians who can best be spared temporarily from their civilian practices. By virtue of this arrangement, civilian medical needs will be safeguarded against haphazard withdrawal of physicians in an emergency.

The Directing Board of the Procurement and Assignment Service fully approves of the formation of affiliated units for the purpose outlined and urges all state chairmen of the Procurement and Assignment Service to facilitate the organization of these units in every way possible. Applicants for U. S. P. H. S. reserve commissions for service in the affiliated units should not be cleared with the Procurement and Assignment Service because the terms of their commissions fully protect the civilian medical needs of the communities in which the units are being organized. It is understood that the U. S. Public Health Service will accept applications only from the following groups: (1) physicians 45 years of age or older, (2) women physicians, (3) physicians of any age who are physically disqualified for military duty, (4) physicians already declared by the Procurement and Assignment Service to be essential for civilian needs.

In the case of each physician under 45 who is being considered for such a commission and who is physically fit for military duty, it is understood that the U. S. Public Health Service will obtain from the local Procurement and Assignment Service chairman concerned assurance that the physician has already been declared essential for civilian needs. The fact that Reserve Officers of the U. S. Public Health Service are now classified as 4-B by Selective Service does not affect this arrangement, since the Public Health Service has agreed that if such physicians holding inactive reserve commissions are subsequently declared by the Procurement and Assignment Service to be available for military duty, they will be permitted to resign their commissions.

APPOINT SUPERVISOR OF RESCUE SERVICE PROGRAM

Simon H. Ash, head of the mineral production security division of the U. S. Bureau of Mines and a leading mine safety engineer, has been appointed to supervise the Office of Civilian Defense Rescue Service Program and will leave for England to study the British civilian rescue service and its experience under air raid conditions. On his return Mr. Ash will set up a school for the training of civilian defense rescue officers. The director of civilian defense, James M. Landis, said in the announcement that the British have discovered that a highly specialized type of rescue crew is necessary to save the lives of victims trapped by the collapse of buildings during a bombing attack. Mr. Ash has directed rescue operations involving practically every type of mine, quarry and tunnel disaster and has been safety engineering consultant for many of the largest terminals and underground construction projects. He was born in the state of Washington, began working in coal mines at the age of 14, and later attended Lehigh University and the University of Washington, from which he received a degree in mining engineering. For three years Mr. Ash has represented the Bureau of Mines on the National Resources Planning Board. For the purpose of enabling him to carry out his new duties, Mr. Ash has been commissioned in the U. S. Public Health Service and assigned to the Office of Civilian Defense.

ARMY

BRIGADIER GENERAL NORMAN T. KIRK NOMINATED FOR SURGEON GENERAL

The nomination of Norman T. Kirk to be Surgeon General of the Army with the rank of major general has been sent to the Senate by the President. General Kirk, who is 55 years old, was until recently commanding general of the Percy L. Jones General Hospital in Battle Creek, Mich. He was formerly chief of the surgical service at the Army Medical Center at the Walter Reed General Hospital, Washington, D. C. He entered the army medical corps in 1913 with the rank of first lieutenant. He is to succeed Major Gen. James C. Magee, whose term expires on June 1.

THE HALLORAN GENERAL HOSPITAL

The Paul Halloran General Hospital is a 3,000 bed army general hospital located on 383 acres of partly wooded land in the middle of Staten Island, New York, and is established as a separate military post, directly under the commanding general of the Second Service Command, Services of Supply, Governors Island, N. Y.

The hospital proper was built by the state of New York and consists of forty-three brick buildings of Georgian architecture in addition to a series of army hospital clinics, such as surgery, x-ray, laboratory, physical therapy, dental and detachment barracks. Construction of the buildings was started by the Department of Mental Hygiene of the State of New York in 1939. A shortage of critical materials prevented final completion, and the buildings had never been occupied. After preliminary surveys by Surg. Gen. James C. Magee, it was decided that the site and buildings offered great possibilities for use as an Army General Hospital. A survey by the Army Corps of Engineers was made in July 1942, and the buildings were finally turned over to the Army on October 14. Extensive alterations have been made to the buildings. The hospital received its first patients on November 5.

The hospital was named in honor of the late Col. Paul Stacy Halloran, a distinguished officer of the Medical Corps of the U. S. Army.

The staff is in part as follows:

Col. Ralph G. DeVoe, M. C., Commanding Officer.
Col. Edward N. Packard, M. C., Chief of Medical Service.
Lieut. Col. Alonzo T. Briney, D. C., Chief of Dental Service.
Lieut. Col. Vansel S. Johnson, M. C., Chief of Surgical Service.
Major George K. Carpenter, M. C., Chief of Orthopedic Section, Surgical Service.
Major Joseph A. Crisler Jr., M. C., Assistant Chief of Surgical Service.
Major Kenneth M. Kahn, M. C., Registrar.
Major Arnold M. Kallen, M. C., Hospital Inspector.
Major Harold P. Lewis, M. C., Assistant Chief of Medical Service.
Major Joseph Rothman, M. C., Chief of Officers' Medical Section.
Major Charles H. Schutt, M. C., Plans and Training Officer.
Major Thomas P. Shearer, M. C., Chief of Genitourinary Section, Surgical Service.
Major Arthur B. Soule Jr., M. C., Chief of X-Ray Service.
Major George A. Vassos Jr., M. C., Executive Officer; Public Relations Officer.
Major Thomas B. Wiper, M. C., Chief of Septic and Thoracic Surgical Section; Assistant Chief of Surgical Service.
Capt. Melvin F. Ames, M. C., Assistant Chief of Officers' Section, Medical Service.
Capt. Charles V. Amole, M. C., Genitourinary Section, Surgical Service.
Capt. George S. Baker, M. C., Chief of Neurosurgical Section, Surgical Service.
Capt. Theodore Baker Jr., M. C., Chief of Laboratory Service.
Capt. John M. Buchanan, M. C., Chief of Tuberculosis Section, Medical Service, Assistant Plans and Training Officer.
Capt. William S. Conway, M. C., Chief of Ear, Nose and Throat Section, Surgical Service.
Capt. Edmund J. Croce, M. C., General Surgical Section, Surgical Service.
Capt. Arthur G. DeVoe, M. C., Chief of Eye Section, Surgical Service.
Capt. Henry L. George Jr., M. C., Chief of Communicable Disease Section, Medical Service.
Capt. Hazen L. Hauman, M. C., General Surgical Section, Surgical Service; Chief of Officers Section.
Capt. Thomas A. Johnson, M. C., Chief of Gastrointestinal Section, Medical Service.
Capt. Sidney Katz, M. C., General Surgical Section, Surgical Service, Assistant Plans and Training Officer.
Capt. John W. Keyes, M. C., Chief of Cardiovascular Section, Medical Service.
Capt. Carmello P. Locasto, M. C., Chief of Dermatology and Syphilis Section, Medical Service.
Capt. William S. McCullagh, M. C., Chief of Neuropsychiatry Section, Medical Service.
Capt. Karl F. Mech, M. C., Orthopedic Section, Surgical Service.
Capt. George E. Paulissen, M. C., Anesthesia and Operating Section, Surgical Service.
Capt. Robert T. Rosenfeld, M. C., Orthopedic Section, Surgical Service.
Capt. Thomas D. Thompson, M. C., Orthopedic Section, Surgical Service.
Lieut. Raymond L. Abraham, M. C., Chief of Obstetric and Gynecologic Section; Assistant Plans and Training Officer.
Lieut. Louis C. Acquarulo, M. C., Orthopedic Section, Surgical Service.
Lieut. Isidore R. Cohen, M. C., General Medical Section, Medical Service.
Lieut. Michael J. Dardas, M. C., Chief of Outpatient Service.
Lieut. Benjamin F. Dennis, M. C., Neuropsychiatric Section, Medical Service.
Lieut. Frank F. W. Drews Jr., M. C., Orthopedic Section, Surgical Service.
Lieut. Lloyd E. Hawes, M. C., Assistant Chief, X-Ray Service.
Lieut. Robert W. Mann, M. C., General Surgical Section, Surgical Service.
Lieut. John S. McQuade, D. C., Dental Service.
Lieut. Joseph M. Miller, M. C., Septic and Thoracic Section, Surgical Service.
Lieut. Moore A. Mills, M. C., Receiving and Disposition Officer; Chief of Tropical Medicine Section, Medical Service.
Lieut. Kurt Nussbaum, M. C., Neuropsychiatric Service, Medical Service.
Lieut. Nicholas R. Occhino, M. C., General Medical and Tuberculosis Section, Medical Service; Pharmacy Officer.
Lieut. William S. Rhode, M. C., Neuropsychiatric Service, Medical Service.
Lieut. John R. Sharp, M. C., Upper Respiratory Section, Medical Service.
Lieut. Darrel T. Shaw, M. C., Chief of Plsatic Surgical Section, Surgical Service.
Lieut. Raymond J. Sherer, M. C., Dermatology and Syphilis Section, Medical Service.

FEMALE PHYSICIANS

On April 16 the President signed a bill enabling the commissioning of women in the Medical Corps for duty as physicians. No similar authority exists with regard to dentists or veterinarians. The procedure outlined for the processing of male physicians will apply to the processing of female physicians. No female physician will be processed until the District Office has received her availability clearance form from the state Procurement and Assignment physician chairman. It is anticipated that some delay may ensue before the Surgeon General will be in a position to recommend female physicians for appointment, because regulations and forms must be prepared and issued. Whereas district offices are authorized now to process any female physicians whose availability may be declared by the Procurement and Assignment Service, such candidates should be advised that there will probably be a considerable time lag in the consideration of their cases by the Surgeon General. Until further instructions, district offices will use the same forms and procedures in processing female physicians as are in use for male physicians. Female physicians processed and appointed will count against, and are not in addition to, the total figure for physicians in the Surgeon General's 1943 program.

CHANGES IN MEDICAL OFFICERS

Dr. A. William Reggio, Boston, recently state chief of emergency medical service for Massachusetts, has been appointed regional medical officer for the first civilian defense region (the New England states), succeeding Dr. Dudley A. Reekie. Dr. Reggio was formerly instructor in surgery at Harvard Medical School and assistant visiting surgeon at the Massachusetts General Hospital. Dr. Reekie, who was acting chief of the field casualty section, has since been assigned by the Surgeon General, U. S. Public Health Service, to the U. S. State Department to head a group of Public Health Service officers who will act as special advisers on health matters to Robert Murphy, chief civil affairs officer for North Africa. To succeed Dr. Reekie as acting chief of the field casualty section, Dr. H. van Zile Hyde, regional medical officer for the second civilian defense region (New York, New Jersey and Delaware), has been transferred to Washington. Dr. John J. Bourke, deputy state chief of emergency medical service for New York, is now acting regional medical officer for the second region.

Dr. David D. Rutstein, medical gas officer on the Washington staff, has resigned to become deputy health commissioner of New York City. Before he joined the medical division, Dr. Rutstein was chief of the cardiac bureau of the New York State Health Department, Albany.

MISCELLANEOUS

QUINACRINE PLACED UNDER ALLOCATION

Quinacrine, a synthetic chemical having antimalarial properties similar to those of quinine, which is now almost unobtainable, was placed under allocation on April 2 by the War Production Board through issuance of General Preference Order M-306. Quinacrine is also produced under the trade name of atabrine. A producer seeking authorization to deliver or use quinacrine in any month beginning with May 1943 must file application with the War Production Board on form PD-602 by the 20th of the preceding month. In addition, each producer is required to file by the 5th of each month, beginning with May, with WPB on form PD-602 a list of civilian customers to whom he made deliveries in the preceding month. A producer is defined in the order as a person who produces or imports quinacrine or has it prepared for him or who makes quinacrine tablets or other dosage forms of quinacrine except ampules.

DEVICE FOR FOLDING SURGICAL DRESSINGS

E. I. du Pont de Nemours and Company, Inc., Wilmington, Del., announces the invention and mass production of a device that folds surgical dressings three to five times faster than by hand. The inventor, Philip W. Burnham, an engineer with the du Pont Company, and more than a score of other experts and officials rushed to completion the device within four weeks to aid the Wilmington Red Cross chapter in meeting huge army and navy quotas for surgical dressings. While the Delaware Red Cross has adopted the device, it will not be available on a national scale until officially adopted by the American Red Cross. The device is so simple to operate that Delaware school children are being organized for this work. The turnover among volunteer Red Cross workers is expected to be far less, it is said, now that the surgical dressing folding job will be less monotonous and tiring. Harry J. Haon, director of the Delaware chapter, said that the local Red Cross chapter fell behind its quota for dressings by several hundred thousand for the first quarter of this year, despite breaking all previous production records. If this condition applies nationally, the new folding device would aid the many chapters more nearly to meet their quotas of surgical dressings. While more workers are urgently needed, Mr. Haon is sure that many volunteers will come forward when the new folding devices are available. The plans, specifications and all rights to the appliance are being given to the Red Cross.

PUBLIC HEALTH UNDER HITLER

According to NDZ of February 15, the Reich Committee for Medical Research into Work and Output (Reichsarbeitsgemeinschaft für Arbeits- und Leistungs-Medizin) was set up in Berlin February 21. It will combine, under the leadership of the DAF, all research activity in this field. On this occasion the director of the Office for Health and Protection of the People, Dr. Bockhacker, spoke to representatives of the press about the wartime tasks in connection with health measures in the factories.

The employment of doctors in the factory itself has during the last few years become an integral part of factory life. The war makes it necessary to pay more attention to the health of the working people. The call for higher output and especially the appeal to women must not involve injuries to health. It is the task of the works doctors to insure this, and the scope of their preventive activities has recently been further extended by the introduction of medical inspections at the place of work. This does away with the long periods of waiting in surgeries and leads to considerable economies in working hours.

The system of works doctors has revolutionized the work of medical care for the working people, and the results of this are visible in the good state of health of the workers. Even in occupations in which there is considerable danger the general state of health is so outstandingly good that absence from work amounts to only 3 per cent on the yearly average. In some instances medical inspection in the factories has even reduced absenteeism below the peacetime frequency. More than 5,000 factory medical stations, partly with auxiliary staffs, have so far been set up. Thousands of doctors have become accustomed to factory life, treating the workers practically on the job. It is the task of the works doctor not to treat sick persons but rather to maintain the health of his charges and to protect them from all influences that might prejudice their power of resistance. He is, so to speak, the industrial pastor of the workers. Diagnosis of the job is added to the diagnosis of working capacity.

Sept.-Jours of January 10 stated that, among the illnesses due to food shortage, carotenemia has appeared. The greatest menace due to restriction is tuberculosis. "It is estimated there were 550,000 dangerous cases of tuberculosis in France before the war. They number 1,000,000 today. . . . Those affected are mostly men and women betwen 50 and 60 whose old lesions decalcify and release bacilli owing to lack of calcium, contained in milk, and lack of meat and fats." (Carotenemia is a disease which has recently appeared in France and is due to eating too many vegetables of the carrot type.—ED.)

ORGANIZATION SECTION

OFFICIAL NOTES

DOCTORS AT WAR

Radio broadcasts of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Departments of the United States Army and the United States Navy are on the air each Saturday at 5 p. m. Eastern War Time (4 p. m. Central War Time, 3 p. m. Mountain War Time, 2 p. m. Pacific War Time). An exception is the Chicago area, where the broadcasts are heard by transcription at 10:30 p. m. Saturdays over Station WMAQ. Unless otherwise indicated, each program is summarized by Dr. W. W. Bauer, Director, Bureau of Health Education.

The titles and guest speakers for the next four programs are as follows:

May 15. "High Air."
May 22. "Flash Burns."
Speaker, Rear Admiral Ross T. McIntire, M. C., Surgeon General, United States Navy.
May 29. "Sick Call."
June 5. "Doctors for Tomorrow."
Speaker, Brig. Gen. Fred W. Rankin, President of the American Medical Association.

BEFORE THE DOCTOR COMES

The American Medical Association program on Radio Station WLS (890 kilocycles) entitled "Before the Doctor Comes" will be on the air every Thursday afternoon at 2:45 up to and including May 27. Mrs. June Merrill will interview Dr. W. W. Bauer, Director, Bureau of Health Education, on common home health problems. The titles for the last three programs are:

May 13. "Growing Pains."
May 20. "Nervous Habits."
May 27. "Immunization."

MEDICAL LEGISLATION

STATE MEDICAL LEGISLATION

California

Bills Introduced.—A. 328 proposes the enactment of a hospital lien law applicable to the operators of a public or private hospital which furnishes hospital service to an injured person. The term "hospital service" would include medicines, supplies and roentgenologic, laboratory, nursing and other care and service necessary for the treatment of the injured. A. 664, to amend the business and professions code, proposes to authorize the board of medical examiners to examine applicants for licenses to practice physical therapy, which is defined as the treatment of patients by the use of massage, therapeutic massage, exercise, therapeutic exercise, or by the use of the physical, chemical and other properties of electricity (except x-rays, radium and electrosurgery), heat, light or water.

Colorado

Bill Enacted.—H. 236 was approved, April 20. It enacts a service tax for the state of Colorado but exempts therefrom services rendered by chiropractors, osteopaths, physicians, surgeons and other practitioners of licensed professions.

Delaware

Bills Enacted.—S. 41 was approved, April 13. It amends the medical practice act by exempting therefrom the treatment of human ills by prayer or spiritual means in accordance with the tenets of any well recognized religious denomination. H. 97 was approved, April 16. It amends the workmen's compensation act by authorizing an employee to engage a physician or surgeon other than the one furnished by the employer and to receive from the employer the reasonable cost of the services rendered by such physician or surgeon.

Florida

Bills Introduced.—S. 182 proposes, in effect, to waive physicians' annual registration fees during the period of their service with the armed forces of the United States or of any allied nation. H. 276 proposes that all persons desiring to be married must furnish a certificate from a physician licensed to practice and engaged in the practice of medicine in the state of Florida certifying that such physician has made an examination and found the applicant to be free from any venereal disease.

Illinois

Bill Introduced.—H. 478 proposes the appointment by the department of registration and examination of an advisory board consisting of three qualified naprapaths to examine applicants desiring to practice naprapathy, which is defined as a method and system of practical and scientific treatment of the human body for remedial and hygienic purposes without the use of medicine or operative surgery. The proposal would further provide that naprapathic treatment is principally as follows: (1) the use of the hands and fingers in contact with the external surfaces of the human body; (2) manual manipulation, massaging, exercising, rubbing, stretching and adjusting contracted muscles, ligaments and shrunken connective tissues for the purpose of releasing pressure on nerves and relieving abnormal nerve tension; (3) programs of rest, diet, exercise, fresh air, sunlight, elimination of waste and systematic practice of personal hygiene; (4) application of heat and electricity, and hot and cold applications; (5) application and use of modern therapeutic appliances, such as the use of infra-red, ultraviolet rays, short wave electric currents and diathermy treatment.

Massachusetts

Bill Introduced.—H. 894 proposes that recipients of old age assistance shall receive, among other things, false teeth, eye glasses and hospital and medical services which the aged citizen might need.

Michigan

Bills Enacted.—H. 250 has become Public Act No. 227 of the Acts of 1943. It amends the crippled children's act by limiting professional fees for major operations to $75 and to $200 for any one physician for any one patient in any one year. H. 264 has become Public Act No. 229 of the Acts of 1943. It provides that, where persons entitled to hospital service under a contract for such service are unable to obtain admittance to any hospital because of lack of facilities or accommodations, such contract may provide a method by which such persons may be reimbursed in whole or in part for the expense of nursing and other nonmedical care, restricted to the equivalent of hospital care, required from the illness or injury entitling such person to hospital service.

Missouri

Bills Introduced.—S. 79, to amend the law relating to food and drugs, proposes, among other things, that a drug shall be deemed to be misbranded if it is sold at retail and contains any quantity of aminopyrine, barbituric acid, cinchophen, dinitrocresol, sulfanilamide drugs, thyroid or their derivatives, unless it is dispensed on a written prescription signed by a licensed physician, dentist or veterinarian and its label bears the name and place of business of the dispenser, the serial number and date of such prescription, and the name of the prescribing

physician, dentist or veterinarian. H. 572 proposes that all residents of the state who are or shall become habitual drunkards, habitual users of opium, cocaine, or of some salt or derivative of these drugs, to such an extent as to become what are commonly called "habitual drunkards," "dope fiends" or "addicts" shall be subject to involuntary confinement in the state hospitals for insane persons for such time as might be necessary to accomplish a cure. H. 575 proposes to amend the criminal law concerning abortions by eliminating therefrom an existing proviso exempting instances in which an abortion or miscarriage was procured in order to preserve the life of the mother or unborn child when such action was necessary in the opinion of a duly licensed physician. H. 621 proposes the establishment of a sanatorium for the treatment of tuberculous Negroes.

Nevada

Bill Enacted.—S. Concurrent Resolution No. 3 was adopted, March 17. It directs the Nevada industrial commission to make a study and survey of the occupational disease codes and legislation of other states and to make a report thereon at the beginning of the next session of the state legislature.

New Hampshire

Bill Enacted.—S. 55 has become chapter 122 of the Laws of 1943. It provides for the recognition within the state of hospital service corporations organized under the laws of other states when such other states grant like recognition to New Hampshire hospital service corporations.

New Mexico

Bill Enacted.—S. 141 has become chapter 83 of the Laws of 1943. It requires every physician who makes a diagnosis of or treats or prescribes for a case of venereal disease to report such case immediately to the municipal or district health officer and authorizes state, district and municipal health officers to detain and examine persons reasonably suspected of being infected with a venereal disease and to require persons so infected to report for treatment to a reputable physician.

Pennsylvania

Bill Enacted.—H. 235 has become act 45 of the Acts of 1943. It authorizes the state board of medical education and licensure to issue temporary certificates to physicians licensed to practice in other states after such physician has submitted satisfactory proof to the board that he possesses a license issued by the authorized agency of such other state, that this license is still in effect and has not been revoked or suspended, that he is of good moral character, is not addicted to the intemperate use of alcohol or narcotic drugs, has scholastic qualifications equivalent to those required by law of Pennsylvania and is of satisfactory professional standing in the state from which he comes.

South Carolina

Bill Introduced.—H. 141 proposes that all medical and hospital expenses shall be an exemption under the state income tax law to the same extent and in the same amount as they are allowed under the federal law.

Wisconsin

Bill Introduced.—S. 313 proposes, among other things, that no person shall practice medicine, surgery or osteopathy, or any other system of treating bodily or mental ailments or injuries of human beings, under any other Christian or given name or any other surname than that under which he was originally licensed or registered to practice in Wisconsin or any other state. The bill would further provide that no person engaged in the practice of any profession for which a license is required by the state shall change his Christian or given name or his surname to any other Christian or given name or any other surname than that under which he was originally licensed in such profession in this or any other state.

WOMAN'S AUXILIARY

Colorado

In February Mrs. Emily G. Bogert, state commander for the Colorado Society for the Control of Cancer, demonstrated to the Woman's Auxiliary to the Denver County Medical Society the methods of making dressings and rolling bandages which are used at the cancer clinics of Colorado General and St. Luke's hospitals. The Visiting Nurse Association of Denver also distributes these dressings. Mrs. George W. Miel opened her home to the group and at the February meeting 100 gauze pads, 111 large combination pads and 100 small combination pads were made and 90 bandages were rolled.

Members of the Mesa County auxiliary have constituted a serving unit working at the hospital two afternoons a month and have just purchased an electric sewing machine for use at St. Mary's. They also are serving in the Red Cross gauze room in the Mesa County Center each Thursday morning.

District of Columbia

A Victory Silver Tea to provide Bundles for America and Smokes for Yanks was one of two special activities undertaken recently by the Woman's Auxiliary to the Medical Society of the District of Columbia. Among the guests were presidents of the women's boards of the local hospitals. Past presidents of the auxiliary assisted at the tea table. The committee in charge of donations reported that $65 was collected during the afternoon.

The auxiliary is planning a series of buffet suppers and entertainments for medical officers stationed in nearby camps and hospitals. The first of this series was held in the medical society's building on January 23. About eighty officers attended from Walter Reed Hospital, the U. S. Naval Hospital at Bethesda, Md., Potomac River Naval Command, Headquarters Staff of the Army Air Corps, Bolling Field and Naval Air Station. Assistant hostesses at the party were daughters of physicians.

Indiana

The directors of the Woman's Auxiliary to the Allen County Medical Society met at the home of Mrs. E. M. Van Buskirk. The treasurer's report showed a paid membership of eighty-four at that time. Dr. Jessie C. Calvin is general chairman of the Civilian Defense Nutrition Program. Mrs. E. N. Mendenhall is chairman of the organization of neighborhood nutrition classes. Mrs. M. E. Glock is Mrs. Mendenhall's assistant in the organization work. Mrs. Ray Chester is the library chairman, assisted by Mrs. J. R. Adams and Mrs. Ernest Carlo. The duties of this committee are to review books, current magazine articles and commercial literature that are placed on the nutrition shelf and reading table in the public library and the packets carried into the rural districts by the library busses. Mrs. A. C. Worley, chairman of a pediatric project, has Mrs. Carl Moats, Mrs. Doster Buckner, Mrs. C. B. Parker, Mrs. Sterling Hoffman and Mrs. A. Jerome Sparks to assist in providing recreational material for children in the three hospitals. Mrs. Noah Zehr is chairman of the auxiliary Red Cross activities in producing surgical dressings, sewing and administrative work. Mrs. Maurice R. Lohman was chairman of the auxiliary committee in the Minute Woman's Bond Sale campaign during Thanksgiving week. Her committee, composed of Mrs. S. R. Mercer, Mrs. N. H. Prentiss and Mrs. Noah Zehr, accounted for the sale of $21,000 worth of bonds. Mrs. Edward Schlegel was city co-chairman of the County Minute Woman's Bond Sale. Mrs. Schlegel has just been appointed a member of the executive board of the county bond sale committee.

New Jersey

A luncheon meeting opened the new year for the auxiliary in the Young Women's Christian Association, Jersey City. Mrs. Andrew Ruoff presided and welcomed Mrs. Leah Hornberger, president of the state auxiliary. The defense chairman reported the results from the sale of War Bonds and Stamps by the members in two banks during the week of December 7: stamps sold amounted to $925.80 and bonds sold to $7,425.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Physicians Needed.—Psychiatrists, anesthetists and resident physicians in the specialties of dermatology, syphilology and pathology are being sought for positions in the Los Angeles County Hospital. Applicants for the residencies will be rated on their professional training and experience as evidenced by investigation and interview. An oral examination will be given for the position of psychiatrist and anesthetist, carrying a salary of $235 a month. Doctors of medicine under 55 years of age who have completed one year's internship in an approved hospital may file an application for any of the positions. Applications should be filed on or before Friday, May 14. Additional information may be obtained from the Los Angeles County Civil Service Commission, Room 102, Hall of Records, Los Angeles.

ILLINOIS

State Medical Meeting.—The one hundred and third annual meeting of the Illinois State Medical Society will be held at the Palmer House, Chicago, May 18-20, under the presidency of Dr. Edward H. Weld, Rockford. Among the out of state speakers will be:

Dr. Frank V. Meriwether, Columbus, Ohio (subject to be announced).
Dr. Mynie G. Peterman, Milwaukee, Convulsions.
Dr. Paul A. O'Leary, Rochester, Minn., Wartime Considerations of Syphilis.
Major Murray Sanders, M. C., A. U. S., Epidemic Conjunctivitis.
Dr. Gordon F. Harkness, Davenport, Iowa, Industrial Ophthalmology and Otolaryngology.
Dr. Ralph E. Campbell, Madison, Wis., Importance of the Outlet Contraction of the Pelvis in Obstetrics.

Dr. James E. Paullin, Atlanta, Ga., President-Elect of the American Medical Association, will deliver the annual oration in medicine Tuesday evening. No speaker was announced for the oration in surgery to be given Wednesday morning. Tuesday afternoon there will be a symposium on nutrition by Drs. John F. Carey, Joliet; Henry G. Poncher, Chicago; John R. Vonachen, Peoria, and Charles A. Aldrich, Chicago. A cardiovascular round table will be conducted Wednesday afternoon by Drs. Francis D. Murphy, Milwaukee; Hermon H. Cole, Springfield, and Edgar M. Stevenson, Bloomington. At the Secretaries' Conference Tuesday evening Hon. H. H. Thomas, British Consulate General, Chicago, will give a talk entitled "The Japanese as I Knew Them" and Dr. Charles H. Phifer, Chicago, past president of the society, will discuss "Latest Developments in Procurement and Assignment." Other groups meeting at the same time will be the woman's auxiliary to the state medical society, the Physicians' Association of the Department of Public Welfare of the State of Illinois, the Illinois Chapter of the American College of Chest Physicians, Medical Women's Association and the Medical Alumni Association of the University of Illinois. An industrial health conference will be a feature of the meeting May 18, with the Central States Society of Industrial Medicine and Surgery and the Chicago Society of Industrial Medicine and Surgery meeting in joint session.

KENTUCKY

Personal.—Dr. Joseph Lachman, formerly of Chester, Pa., U. S. Public Health Service, was recently appointed in charge of the Pulaski and McCreary county health departments.—— Dr. William J. Thomasson, Newport, observed his fiftieth anniversary as a practicing physician on April 15.

Extension Course in Medicine.—On May 6 the first of a series of extension courses in medicine sponsored by the Kentucky State Medical Association was held in Corbin. The speakers were Drs. John B. Floyd, Louisville; Walter E. Doyle, Louisville; Percy S. Pelouze, Philadelphia, and Milton J. Wilder, Louisville. Others in the series will be held May 13, with Drs. Doyle, Joseph G. Sherrill, Louisville, Henry H. Caffee, Oneida, and Alice D. Chenoweth, Louisville; May 20, Drs. Doyle, Sherrill, John H. Kooser, Hyden, and Paul A. Turner, Louisville; May 27, Drs. Sherrill, Doyle, Chenoweth and Oscar O. Miller, Louisville.

MASSACHUSETTS

State Medical Meeting.—The one hundred and sixty-second annual meeting of the Massachusetts Medical Society will be held at the Hotel Statler, Boston, May 24-26, under the presidency of Dr. George Leonard Schadt, Springfield. Among the out of state speakers will be:

Major Stevens J. Martin, M. C., A. U. S., Current Problems of the Army Anesthesiologist.
Dr. Thomas Parran, surgeon general, U. S. Public Health Service, Wartime Responsibilities of the Public Health Service.
Brig. Gen. James Stevens Simmons, M. C., U. S. Army, Global Malaria.
Col. Richard P. Strong, M. C., A. U. S., Increased Danger from Tropical Disease in the Present War.
Dr. William B. Snow, New York, Physical Therapy in Arthritis.
Dr. Russell M. Wilder, Washington, D. C., Medical Nutritional Requirements in the Time of War.
Dr. Alvan L. Barach, New York, Oxygen Therapy, as Related to Gas Poisoning in War and in Civilian Disasters.
Col. John J. Moorhead, O. R. C., U. S. Army, Surgical Lessons of the Pearl Harbor Attack.
Dr. Harold N. Cole, Cleveland, Local Use of Sulfonamides in Dermatoses.
Major Murray Sanders, M. C., A. U. S., Epidemic Keratoconjunctivitis.

The annual oration will be delivered Tuesday morning by Dr. Edward P. Bagg, Holyoke. His address will be entitled "Small Puddles." The Shattuck Lecture will be delivered Tuesday evening by Dr. George W. Thorn, Boston, on "Physiological Considerations in the Treatment of Nephritis." There will be a round table discussion Wednesday on recent improvements in obstetric technic with Drs. Raymond S. Titus, Boston, Joseph W. O'Connor, Worcester, and Arthur F. G. Edgelow, Springfield.

MICHIGAN

Typhoid Carriers.—The Michigan Department of Health now has under supervision 276 typhoid carriers. In all, 411 carriers have been identified since 1932, when the search for these carriers was begun. Some have since died or left the state. In 1932 9 known carriers were listed, while reported cases of typhoid totaled 513. Only 20 cases of typhoid have been reported so far in 1943.

Tetanus Toxoid for Farmers and Industrial Workers.—The state department of health, Lansing, announces that its laboratories are ready to distribute tetanus toxoid as protection against lockjaw for farmers and workers in industry. The toxoid will be distributed through health officers and physicians and will be used instead of the tetanus antitoxin which has been furnished in the past. The toxoid will also be supplied to all Michigan citizens who want it.

University News.—Wayne University College of Medicine, Detroit, has received a grant of $1,800 from the Ciba Pharmaceutical Products Company for the continuation of a study on the metabolism of estrogens by Warren O. Nelson, Ph.D., Detroit, and one of $2,500 for vasoconstrictor research under the direction of Dr. Fredrick F. Yonkman, Detroit. The Nutrition Foundation, New York, renewed a grant of $3,600 for Arthur H. Smith, Ph.D., Detroit, to further his soybean study, started last year.

Defects Among Students.—Out of 508 Wayne University freshmen who were given physical examinations at the beginning of the semester, only 52 showed no physical defects of any sort; 797 specific defects were reported. According to a report of Dr. Irvin W. Sander, Detroit, director of the Wayne University Student Health Service, most of the defects were of a minor nature as indicated by the fact that 88 per cent of the freshmen were graded as class A, with no restrictions placed on their activities; 10 per cent were graded as class B, with specific types of activity forbidden, and 2 per cent were placed in class C, in which no physical activity is permitted.

NEW JERSEY

State Medical Meeting.—The one hundred and seventy-seventh annual meeting of the Medical Society of New Jersey will be held at the Hotel Essex House, Newark, May 25-26, under the presidency of Dr. Elias J. Marsh, Paterson. Features of the meeting will be panel discussions on burns and on virus pneumonia.

Tenth Anniversary of Therapeutic Research Institute.—Special ceremonies were held, April 26, to commemorate the tenth anniversary of the opening of the Merck Institute for Therapeutic Research, Rahway. Among the principal speakers were William H. Sebrell Jr., surgeon, U. S. Public Health Service, Bethesda, Md.; Dr. Francis G. Blake, New Haven, Conn., and Dr. Russell M. Wilder, Washington, D. C. The Merck Institute for Therapeutic Research, a nonprofit corporation under the laws of the state of New Jersey, was founded in 1933 for the purpose of conducting investigations into the

causes, nature and mode of prevention and cure of diseases in men and animals. In his report to the trustees, Dr. Hans Molitor, Rahway, director of the institute, pointed out that since 1933 the size of the Merck Institute had increased almost six times and its personnel eighteen times. The new three-story laboratory building was occupied two years ago.

NEW YORK

Illegal Practitioners. — The state education department announces the following convictions which have been attained on charges of unlawful practice of medicine: Louis Beres, New York, sentenced in the court of special sessions of the city of New York, county of New York, to pay a fine of $100 or serve thirty days and in addition to serve three months in the workhouse, execution of workhouse sentence being suspended during good behavior; Frank Gust-Ferris, Brooklyn, sentenced in the court of special sessions of the city of New York, county of Kings, to serve three months in the workhouse, execution of sentence being suspended during good behavior, and Arthur L. Kelhoffer, Rockville Centre, sentenced after being found guilty in a trial by jury in the District Court of Nassau County at Minneola, to pay a fine of $500 or serve one day for each dollar thereof unpaid and in addition thereto to serve one year in the Nassau County Jail, jail sentence being suspended. Kelhoffer has appealed. His is said to be a third offense.

Mental Patients Increase.—The state department of mental hygiene announced in its recent report that there were 90,781 resident patients at the end of June in twenty-six institutions over which the department has jurisdiction. In addition, 1,854 patients were in family care and 11,115 on parole, making the number of patients on the books 103,750. Of these 83,002 were classed as mentally defective and 2,514 as epileptic. Resident patients increased by 642, in family care 310 and parolees 1,360. Among primary admissions to civil hospitals were 922 for syphilis and 909 alcoholic cases, these figures representing decreases in the year of 91 and 53, respectively. Dementia precox constituted the largest group of first admissions, 3,330, and arteriosclerosis was second with 3,162. The new Willow Brook State Hospital on Staten Island was finished during the twelve months and progress was reported for the Edgewood State Hospital on Long Island. The army took the latter institution over and also a portion of Rockland State Hospital, Orangeburg. At the end of the fiscal year departmental employees in hospitals numbered 18,576, with 2,837 in state schools, 460 in Craig Colony, Sonyea, and 104 in administrative and preventive work. The department spent $45,670,880.99 during the year, of which $34,814,361 was for the state hospitals, $9,585,398.59 for the state schools for defectives, $939,556.57 for Craig Colony for Epileptics and $331,564.83 for general administration. The cost of patients in the hospitals was $401.46 per capita, in the state schools $349.46 and in Craig Colony $383.48. Patients paid the state $2,895,374.47, the largest amount from this source yet received. Twenty-three aliens and 893 nonresidents were removed from the state.

New York City

Dinner for Dr. J. Lewis Amster.—The medical board of Morrisania City Hospital and numerous friends plan to hold a testimonial dinner and dance at the Concourse Plaza Hotel, May 15, in honor of Dr. Julius Lewis Amster in recognition of his services as president of the medical board and visiting surgeon and to mark his recent elevation to the position of honorary consulting surgeon. The proceeds of the dinner are to be used as an endowment of the J. Lewis Amster Library of the Morrisania Hospital.

Organization Seeks to Eliminate Fee Splitting.—In its effort to eliminate the practice commonly known as "fee splitting" the New York Association of Oxygen and Ambulance Services, Inc., 369 Lexington Avenue, has in progress plans to bring about the voluntary elimination of the practice of paying commissions and inducements for influencing oxygen, ambulance and sickroom supply patronage. Their objectives are set up in an "Agreement of Principles of Business Practice," executed by members of the association. The articles of the agreement discuss prohibited practices, nonparticipants, complaints, adjustments and hearings, liquidated damages and general provisions. All stipulations are to be carried out on a voluntary basis by participants. The New York Association of Oxygen and Ambulance Services, formed some months ago, adopted as its first resolution the objective to eliminate the practice commonly known as "fee splitting." The new Agreement of Principles of Business Practice points out that the new program is not an attempt to restrain trade, create unlawful boycott, regulate or control prices or create a monopoly but seeks to eliminate unfair business competitive practices, to maintain fair conditions of employment and to promote the common welfare of all those engaged in these services for oxygen, ambulance and sickroom supply rental service companies. The plan, it is hoped, will discourage certain forms of commercial bribery which have been developed in the payment of gratuities, tips, gifts and commissions for the purpose of unduly influencing, procuring or directing patronage and clientele.

Committee Appointed to Study Medical and Health Insurance.—On April 23 Mayor LaGuardia appointed a committee of sixteen, headed by himself, to study and report on a comprehensive plan of medical and health insurance of persons of moderate income. The committee held an organization meeting in the mayor's office in City Hall and will meet there again in about three weeks to draw up a course of action. In the meantime, subcommittees will be set up to study special aspects of the medical and health plan. Members of the committee include William Reid, city collector; Dr. Edward M. Bernecker; Dr. Ernest L. Stebbins; David M. Heyman, president of the Public Health Research Institute; Dr. Willard E. Rappleye; Dr. George Baehr, chief medical officer, O. C. D., Washington, D. C.; Dr. John Stanley Kenney; Dr. Arthur F. Chace; Dr. William B. Rawls; Dr. David J. Kaliski; Louis H. Pink, LL.D., president, Associated Hospital Service; Dr. Leo Price; Miss Minnie Teitlebaum, representing the American Federation of Labor; Miss Constance Kyle, representing the Committee of Industrial Organization, and Neva R. Deardorff, Ph.D., of the Greater New York Fund. The committee will be known as the City Committee to Study a Plan to Provide Medical Service for People in Moderate Income Group. The health and medical plan will function, it was indicated, through a panel of physicians set up by a nonprofit corporation. According to the New York *Times*, subscribers to the plan, by payment of a fee, would become entitled to stipulated medical service, including treatment, operations, nursing care and other facilities. In his radio announcement of the program, the mayor is said to have suggested that the existence of the plan would make it easier to absorb into routine medical activities New York physicians returning from service with the armed forces after the war. Although the plan will not be a municipal enterprise, the city will make available its own experience and resources in any way possible.

NORTH CAROLINA

Tuberculosis Sanatorium Opened.—The Eastern North Carolina Sanatorium, Wilson, has been formally opened to patients. It consists of separate units for white and Negro patients, with a present capacity of 110 beds in each unit. The buildings were completed last fall and dedicated Sept. 23, 1942, but actual operation was delayed on account of difficulties in securing some equipment.

Personal.—Dr. John S. Chamblee, Windsor, health officer of Bertie and Chowan counties, has been appointed to a similar position in Nash County, succeeding Dr. Thomas O. Coppedge, Nashville, resigned.——Dr. John R. Saunders, assistant superintendent of the State Hospital in Morganton, was named acting superintendent on March 12. He fills the vacancy that occurred on the death of Dr. Fonso B. Watkins.

New Student Publication.—The *Journal* of the Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, recently made its appearance. It will be published bimonthly by the students of the medical school and original papers will be the work of students concerning study in the school, based on library and experimental research. The first issue was dedicated to Dr. Coy C. Carpenter, dean of the medical school, for his assistance in making the new journal possible. William I. Alsobrook, class of 1944, is the editor.

OHIO

Postgraduate Day Canceled. — The annual Postgraduate Day of the Mahoning County Medical Society, which has been in existence for fourteen years, has been canceled for the duration of the war.

State Medical Election. — Dr. Louis Howard Schriver, Cincinnati, was chosen president-elect of the Ohio State Medical Association at its annual meeting in Columbus recently and Dr. Clifford C. Sherburne, Columbus, was inducted into the presidency. Dr. Harry E. LeFever, Columbus, was named treasurer to succeed Dr. James A. Beer, Columbus.

OKLAHOMA

State Medical Meeting.—The Oklahoma State Medical Association will hold its annual session at the Skirvin Hotel, Oklahoma City, May 11-12, under the presidency of Dr. James D. Osborn, Frederick. Among the speakers will be:

Dr. Udo J. Wile, Ann Arbor, Mich., Rapid Treatment Method for Syphilis.
Major Lester D. Borough, M. R. C., U. S. Army, Some Neuropsychiatric Problems Arising in New Army Recruits.
Capt. Leslie B. Marshall, M. C., U. S. Navy, Naval Medicine.
Dr. Peter E. Russo, Oklahoma City, Spontaneous Gastrocolic Fistula: Report on Two Cases.
Dr. Harry Wilkins, Oklahoma City, Brain Tumors: X-Rays as a Diagnostic Aid.
Dr. Andre B. Carney, Tulsa, Comparative Symptoms in Peptic Ulcers and Cholecystitis in Two Hundred Cases.
Col. Monti L. Belot, M. R. C., U. S. Army, Problems of Induction.
Dr. Gregory E. Stanbro, Oklahoma City, Carcinoma of the Breast.

Other speakers on the program will include Dr. Frank H. Lahey, Boston; Col. William Lee Hart, M.C., U. S. Army, and Gov. Robert S. Kerr, Oklahoma City.

TENNESSEE

State Medical Election.—Dr. Kyle C. Copenhaver, Knoxville, was named president-elect of the Tennessee State Medical Association at its recent annual meeting and Dr. Oval N. Bryan, Nashville, was installed as president. Other officers elected include Drs. Burnett W. Wright, Nashville, vice president from Middle Tennessee; Julius C. Brooks, Chattanooga, vice president from East Tennessee, and John W. Oursler, Humboldt, vice president from West Tennessee. Drs. Harrison H. Shoulders and Charles M. Hamilton, both of Nashville, were reelected secretary-editor and treasurer, respectively. This session was a meeting of the house of delegates only.

Members of New Basic Science Board.—The governor recently appointed the following members to form the basic science board which was created by the basic science law that became effective February 15: Orren W. Hyman, Ph.D., Memphis; Dr. Edward L. Turner and Dr. Waller S. Leathers, Nashville; George M. Cameron, Ph.D., and Judson H. Robertson, Ph.D., Knoxville. At an organization meeting of the board, March 14, Dr. Leathers was elected president, Dr. Turner, vice president and Dr. Hyman, secretary-treasurer. The first examinations were held March 24. Of 192 applicants examined 6 failed. The law requires only candidates for license to practice medicine to take the basic science examination. Candidates for license to practice osteopathy must take the examination if they intend to use drugs in their practice. Candidates for license in chiropractic and in naturopathy are not required to take the examination. All of the applicants taking the March examination were prospective medical graduates. The great majority of them were senior medical students.

WEST VIRGINIA

State Medical Meeting.—The seventy-sixth annual meeting of the West Virginia State Medical Association will be held at the Daniel Boone Hotel, Charleston, May 16-18, under the presidency of Dr. Robert J. Wilkinson, Huntington, and with the Kanawha Medical Society acting as host. Among the speakers will be:

Sister Elizabeth Kenny, Minneapolis, The Kenny Concept of Infantile Paralysis.
Dr. Henry M. Goodyear, Cincinnati, Some Practical Considerations in the Diagnosis and Treatment of Eye, Ear, Nose and Throat Conditions of Interest to the General Practitioner.
Dr. Henry Field Jr., Ann Arbor, Mich., Acute Respiratory Infections.
William H. Sebrell Jr., Bethesda, Md., surgeon, U. S. Public Health Service, Maintaining Adequate Nutrition in Wartime.
Dr. A. Wilbur Duryee, New York, Peripheral Vascular Disease and Industry.
Capt. James S. Klumpp, M. C., U. S. Naval Reserve, The Management of Severe Burns.
Dr. George T. Pack, New York, A Brief Excursion Into the Extension of Radical Surgery in the Treatment of Cancer.
Col. John J. Moorhead, O. R. C., U. S. Army, War Surgery Practices.
Dr. Alan F. Guttmacher, Baltimore, Social Problems of Gynecology and Obstetrics.
Brig. Gen. Fred W. Rankin, M. C., A. U. S., President of the American Medical Association, Some Remarks on Current Medicomilitary Problems.

The oration on medicine will be delivered by Dr. Edward J. Van Liere, dean of the West Virginia University School of Medicine, Morgantown, on "The Effect of Anoxia on the Body" and the oration on surgery by Dr. Claude C. Coleman, professor of neurological surgery at the Medical College of Virginia, Richmond, on "Neurosurgical Procedures for the Relief of Pain." The presidential address, entitled "This Is My Story," will be delivered on Monday evening.

GENERAL

Association on Mental Deficiency.—The American Association on Mental Deficiency will hold its sixty-seventh annual meeting at the Hotel Commodore, New York, May 12-15, under the presidency of Horatio M. Pollock, Ph.D., Albany, N. Y., whose address will be entitled "Mental Hygiene and Mental Deficiency." Included among the speakers will be:

Drs. Herman Yannet and Joyce V. Deutsch, Southbury, Conn., A Clinical and Encephalographic Study of a Group of Patients with Congenital Cerebral Palsy.
Dr. I. Newton Kugelmass, New York, Nutritional Factors in Mental Deficiency.
Dr. Jost J. Michelsen, Boston, Surgical Aspects of Cranial and Intracranial Abnormalities.
Dr. Frederick C. Thorne, Brandon, Vt., Hysterical Manifestations in Mental Defectives.
Lieut. Samuel R. Heath Jr., A. B., Fort Bragg, N. C., Case Studies of Problem Soldiers.

One feature will be a panel discussion on the "Utilization of the Physically and Mentally Handicapped in the War and Postwar Periods."

American Surgical Association.—The annual meeting of the American Surgical Association will be held at the Netherland Plaza, Cincinnati, May 13-14, under the presidency of Dr. Vernon C. David, Chicago. Included among the speakers will be:

Capt. Waltman Walters and Lieut. Hugh R. Butt, M. C., U. S. Naval Reserve, Gastric and Duodenal Ulcers in the Naval Personnel.
Dr. Howard C. Naffziger, Dr. Horace J. McCorkle, and Cordula Kohl, San Francisco, Recognition and Management of Acute Trauma to the Pancreas with Particular Reference to the Use of the Serum Amylase Test.
Drs. Mont R. Reid and William A. Altemeier, Cincinnati, Peroxide Ointments with Special Reference to Urea Peroxide.
Drs. Robert Elman and Carl E. Lischer, St. Louis, An Experimental Study on the Use of Serum, Plasma and Amino-Acids in the Replacement Therapy of Fatal Shock Due to Repeated Hemorrhage.
Dr. Walter E. Dandy, Baltimore, Improved Diagnosis and Treatment of Ruptured Intervertebral Disks.
Dr. James C. White, Boston, Cerebral Concussions—Alterations in Cerebral Volume, Blood Content and Histologic Changes After Experimental Injury by Acceleration of the Head.
Drs. Frank H. Lahey and Lewis M. Hurxthal, Boston, The Thyrocardiac—A Review of Six Hundred Cases.

Memorial to Dr. Robert Tait McKenzie.—Contributions are now being accepted for a memorial to Dr. Robert Tait McKenzie, Philadelphia, to take the form of a bronze casting of the Column of Youth and a suitable pedestal bearing an appropriate inscription to be placed in a prominent location in the headquarters of the National Education Association of the United States in Washington, D. C. The memorial was approved at a meeting of the American Association for Health, Physical Education and Recreation in 1939. In 1941 it was decided that medallions and prints of Dr. McKenzie's creations be made available for distribution to contributors of the general fund and that henceforth the cover of the *Journal* of the American Association for Health, Physical Education and Recreation carry a cut of "The Joy of Effort" or of some other one of Dr. McKenzie's creations. The medallions and prints are now available and it is hoped that through their distribution honor will be paid to the memory of the late Dr. McKenzie, who died in 1938. A graduate of McGill University Faculty of Medicine, Montreal, in 1892, Dr. McKenzie was noted as a sculptor, writer and scientist. He was president of the American Association for Health, Physical Education and Recreation from 1912 to 1915, a past president of the Society of Directors of Physical Education in Colleges and a fellow of the American Physical Education Association and of the American Academy of Physical Education.

LATIN AMERICA

New Medical Journals.—*Páginas de Pediatría* of Buenos Aires is a monthly journal which made its first appearance with the October issue. Dr. Carlos M. Pintos is the editor of the journal, which has its headquarters at 1126 L. Saenz Peña Street, Buenos Aires.——The publication of *Accion Médica* started with the November issue. Headquarters will be those of the *Circulo Médico* of La Paz, Casilla 687, La Paz, Bolivia. The editorial committee is comprised of Drs. Florentina Mejía G., Teodoro Von Borries, Carlos Ferrufino B. and Héctor Aliaga S.

CORRECTION

Capsules Ascorbic Acid.—The description of the recently accepted product Capsules Ascorbic Acid of the McNeil Laboratories, Inc., appeared in THE JOURNAL, March 27, page 1008. The sizes were given as 20 mg. and 100 mg. The 20 mg. dosage form should be 50 mg.

Foreign Letters

LONDON

(From Our Regular Correspondent)

March 20, 1943.

Preliminary Negotiations for Providing a Medical Service for All

As stated in previous letters, the government proposes to organize for the first time in this country a complete medical service, domiciliary and hospital, general and special, free to all. This momentous step is receiving close consideration from the British Medical Association and other medical organizations. The minister of health has invited representatives of the main medical bodies to meet him and consider his suggestions on the procedure to be adopted for consultation between him and the medical profession. At the meeting he proposed the establishment of a committee representative of the medical profession as a whole to consider with him and his officers the many problems and difficulties involved. It was agreed that this committee would not have power to commit the medical profession either in principle or in detail and that the discussions will take place not on the basis of any preconceived plan but "from the ground." When the government, after consultation, is ready to indicate in general terms the measures proposed, these will be submitted, before any final decision is reached, to the various medical bodies represented, for their consideration. In the case of the British Medical Association this will mean that the proposals will be considered by the council and all committees, the divisions and the representative body. Divisions will be asked to ascertain the views of nonmembers as well as of members of the association. Only after decision by the representative body will the association be asked to commit itself.

Consultations have been proceeding between the British Medical Association, the Colleges of Physicians, Surgeons and Obstetricians and Gynecologists and the Society of Medical Officers of Health as to the composition of the representative committee to take part, though not as plenipotentiaries, in the discussion with the minister and his officers. It has been agreed that a body of thirty-seven members representing, in addition to those already mentioned, the Medical Women's Federation, local medical and panel committees and other bodies. About half the members of the negotiating committee represent various committees of the British Medical Association, and the majority of these are general practitioners.

The British Medical Association recognizes that as far as possible every step should be taken to give doctors on war service an opportunity to express their views on any plan put forward by the government. For this purpose machinery will be put in motion for communicating with them individually when their views cannot be ascertained through the usual channels. Perhaps never before has there been so much need for unity within the profession. The present phase is one of consultation without commitment. The British Medical Association says that it is inevitable that any scheme of reorganization affecting deeply the medical profession should be the subject of discussion, difference and controversy. What is now necessary is that the profession should have confidence in those representing it in preliminary discussion, awaiting the time when through its own organization it can examine proposals and express considered views. In an editorial article entitled "A United Front" the *British Medical Journal* states that the history of medical organization is for the most part one of dissension, petty squabbles and narrow sectarian views. It therefore asks for a united front in the diffcult months which lie ahead.

Scientific Freedom and Social Medicine

An article in the *British Medical Journal* (February 20, p. 227) on scientific freedom and social medicine by Dr. Geoffrey Bourne has attracted great attention because of its force. He points out that under the Beveridge scheme the present voluntary hospitals (so called because supported and controlled by voluntary subscribers) will probably come under some form of state or local council control. If the planning is left in the hands of the politicians and civil servants of the state it will almost certainly be modeled according to the traditions of the civil service and along the lines of the emergency medical service and the London County Council hospitals. The defects of the civil service in the stifling of initiative and the shunning of responsibility are notorious. We have now two types of medical service—the autocratic, as typified in the two just mentioned, and the democratic, as typified by the voluntary hospitals. In the autocratic full power is in the hands of the chief medical officer. He delegates it to the medical superintendents of the hospitals, who wield it over their subordinate officers. In the democratic institutions full power over medical matters is entrusted to the democratic medical committees, composed of practicing physicians and surgeons who are experts in their several lines. In the autocratic system the power over medical matters resides in one man, whether he is head of the service or the institution. One man is incapable of having a good knowledge of all branches of medical science, and no man is without personal predilections, sympathies or antipathies, whether as to men or as to other things. Promotion to the autocratic status goes by seniority and political and administrative acumen. Seniority is likely to be assisted by a compliant attitude toward superiors and conservatism of outlook and impeded by a tendency to criticize and by liveliness or originality of outlook and even by devotion to medical practice. In the autocratically run hospital systems a medical officer may not publish a paper without permission from his superiors. It is at the voluntary hospitals that British medicine has been made. There all the great clinicians—Bright, Addison, Graves, Hutchinson, to mention only the greatest—have done their work. These hospitals also constitute the medical schools. The government is so impressed with their work that in this medical revolution (for it is no less) which it contemplates it has announced that it wants to preserve the voluntary hospital. How this can be done under the Beveridge scheme without the evils of bureaucratic control, exposed by Dr. Bourne, is a problem for the English genius for compromise.

Marriages

FRANK EARL POOLE, Clay, W. Va., to Miss Edith Mary Weintz of Austinville, Va., at Durham, N. C., March 24.

JAMES M. KIRTLEY to Miss Leolia Black, both of Crawfordsville, Ind., at Camp Gordon, Ga., February 14.

JOHN SARGENT MORRIS JR., Lynchburg, Va., to Miss Matilda Elizabeth Cobey of Albany, Ga., April 28.

JOHN BORDEN GRAHAM, Goldsboro, N. C., to Miss Ruby McKay Barrett in Laurinburg in March.

FORREST RILEY LAFOLLETTE, New Salisbury, Ind., to Miss Jean Tillotson of Franklin, January 30.

STEPHEN R. BARTLETT JR., Hingham, Mass., to Miss Marion Whitener at Durham, N. C., March 24.

RIPON WILSON LA ROCHE, Charleston, S. C., to Miss Florence Alexander Savage of Camden, April 2.

RALPH E. CROSS, Johnson City, Tenn., to Miss Sallye Foley of Memphis in Denver, February 18.

JOSEPH JACKSON STOKES to Miss Ardis Bowen Stilwell, both of Charleston, S. C., March 25.

JAMES ARTHUR STUMBO, Martin, Ky., to Miss Mary Frances Alston at Frenchburg, March 23.

Deaths

Harry Gideon Wells ✠ internationally renowned as a pathologist, professor emeritus of pathology at the University of Chicago, died, April 26, 1943, aged 67, of hypertension and congestive cardiac failure secondary to heart block.

Dr. Wells was born in New Haven, Conn., July 21, 1875. After graduation from Sheffield Scientific School of Yale University in 1895 he became associated with Rush Medical College as a student and worked as assistant in the laboratories of Drs. Ludvig Hektoen and George H. Weaver. The school was at that time associated with Lake Forest University, from which he received his master's degree in 1897. He received the degree of doctor of medicine from Rush Medical College in 1898. After an internship in the Cook County Hospital he continued his studies at the University of Chicago, from which he received the Ph.D. degree in 1903. He studied in Berlin during 1904 and 1905. Early in his career he combined teaching with research, serving continuously on the faculty of the University of Chicago with the title of associate in pathology in 1901; instructor, 1903; assistant professor, 1904; associate professor, 1909; professor, 1913, and emeritus professor since 1940. He served also as dean of the University of Chicago School of Medicine from 1904 to 1914.

In 1911 Dr. Wells was made director of medical research of the Otho S. A. Sprague Memorial Institute. During World War I he was a member of the American Red Cross Commission to Rumania (1917-1919) with the rank of lieutenant colonel. For his work in Rumania he received the Star of Rumania from the king.

In his professional career Dr. Wells was associated with most of the important scientific organizations in his field. He had been at various times a member of the Association of American Physicians, the Society for Cancer Research, the Chicago Pathological Society, the American Association of Pathologists and Bacteriologists, the American Association for the Advancement of Science, the Society for Biologic Chemistry and the National Academy of Sciences. He was twice honored with the presidency of the American Association of Cancer Research and once with that of the American Association of Pathologists and Bacteriologists. His ability as a lecturer and teacher in the field of pathology was widely recognized. He had been called on at various times to give the Christian Fenger Lecture of the Institute of Medicine of Chicago, the Colver Lectureship at the College of Medical Evangelists (Los Angeles) and the Mütter Lecture of the Philadelphia College of Physicians, as well as innumerable lectures before medical societies.

Probably the most noteworthy of the contributions of H. Gideon Wells was his work in the field of chemical pathology. His book on that subject was recognized as unique in its field. Early in his career he had cooperated with Osborne of Yale University in the development of means for identification of plant proteins by methods of immunology. Other volumes in his specialty included "The Chemistry of Tuberculosis" and "The Chemical Aspects of Immunity."

His distinguished pupils and associates were numerous, including Maud Slye, Sc.D., widely known for her work on cancer, and Dr. Esmond R. Long, leader in the field of tuberculosis.

In the American Medical Association Dr. H. Gideon Wells was secretary of the Section on Pathology and Physiology 1908-1909 and chairman of that section 1909-1910.

His students will remember him particularly for the color of his lectures, for his incisive wit, sometimes tinged with burning sarcasm, and especially for the manner in which he made of pathology an extremely vital subject.

Leopold Lichtwitz ✠ New York; Ludwig-Maximilians-Universität Medizinische Fakultät, Munich, Bavaria, Germany, 1900; clinical professor of medicine at the Columbia University College of Physicians and Surgeons; consulting physician and for many years chief of the medical division of the Montefiore Hospital; past president of the German Society of Internal Medicine; was an officer of the German Society for Gastro-Enterology and Metabolic Diseases and the Society for Internal Medicine of Berlin; served with the German army during World War I; formerly chief of the Rudolf Virchow Hospital in Berlin and the City Hospital in Hamburg; author of "Functional Pathology" and "Nephritis"; aged 66; died, March 18, at his home in New Rochelle of coronary thrombosis.

Montgomery Leonidas Hinds, Arab, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1891; member of the Medical Association of the State of Alabama; formerly mayor of Arab; medical examiner for the Selective Service Board of Marshall County during World War I; director of the Bank of Arab; served as second vice president of the First National Bank of Guntersville; aged 77; died, February 18, in the Highland Avenue Branch of the Baptist Hospital, Birmingham, of uremia, pyelonephritis, bronchopneumonia and arteriosclerotic heart disease.

James Kennedy Ashburn ✠ Batavia, Ohio; Medical College of Ohio, Cincinnati, 1900; chairman of the Clermont County Selective Service Board number 2; aged 65; died, February 9, of coronary thrombosis and cerebral embolism.

Frank Levi Baum, Boyertown, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1911; served during World War I; aged 68; died, February 14, in the Homeopathic Hospital, Reading, of hepatitis and cholecystitis.

Shirley Francis Boyce, Hugoton, Kan.; Kansas City (Mo.) College of Medicine and Surgery, 1916; member of the Kansas Medical Society; aged 47; died, February 17, in Wichita of acute hepatitis.

John Ira Boyer, Long Beach, Calif.; College of Physicians and Surgeons, medical department of the University of Southern California, Los Angeles, 1912; member of the California Medical Association; served in the medical corps of the U. S. Army during World War I; aged 56; on the staff of the Seaside Hospital, where he died, February 21, of carcinoma of the liver.

William Elyet Byers, Baltimore; Baltimore Medical College, 1904; formerly demonstrator of anatomy at his alma mater; aged 69; died, February 28, in the Johns Hopkins Hospital of bronchopneumonia and advanced carcinoma of the prostate.

George Pierce Florence, Greenville, Ga.; Atlanta School of Medicine, 1911; aged 53; died, February 28, of injuries received in an automobile accident.

Samuel Fuxon ✠ Brooklyn; Tufts College Medical School, Boston, 1923; aged 49; died, February 18, of coronary occlusion.

Robert G. Gamble, Haverford, Pa.; University of Maryland School of Medicine, Baltimore, 1884; member of the Medical Society of the State of Pennsylvania; president emeritus on the staff, for many years director of medical services, member of the board of directors and on the consulting staff of the Bryn Mawr (Pa.) Hospital; aged 80; died, March 12, of coronary occlusion and arteriosclerosis.

Wade Gaston, Lost Creek, W. Va.; Eclectic Medical Institute, Cincinnati, 1896; aged 74; died in February of coronary thrombosis.

Edwin Robert Girvin, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1875; aged 89; died in February.

Hugh William Graham, Mount Morris, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892; member of the Michigan State Medical Society; past president of the Genesee County Medical Society; at one time president of the village of Mount Morris; served as mayor and as president of the board of education for many terms; aged 74; on the staff of the Hurley Hospital, Flint, where he died recently of chronic uremia.

Richard Hardy Gray, San Antonio, Texas; State University of Iowa College of Homeopathic Medicine, Iowa City, 1895; formerly an acting assistant surgeon in the U. S. Public Health Service; aged 80; died, March 9, in the Medical Arts Hospital of prostatic obstruction.

Frank C. Gregg, Austin, Texas; University of Texas School of Medicine, Galveston, 1900; member of the State Medical Association of Texas; served as a lieutenant commander in the medical corps of the U. S. Navy during World War I; chief of the staff of the Brackenridge Hospital; aged 66; died recently in a local hospital of coronary thrombosis.

Henry Hartwell Howell, San Gabriel, Calif.; University of California Medical Department, San Francisco, 1879; at one time coroner of Inyo County; aged 96; died, February 21, in Alhambra of bronchopneumonia.

Thomas Jefferson Kelley, Marathon, Iowa; Rush Medical College, Chicago, 1901; aged 74; died, February 6, of cerebral hemorrhage.

William Tilden Kirk, Springfield, W. Va.; Maryland Medical College, Baltimore, 1901; aged 67; died, February 13.

Henry Lombert Knight, San Pedro, Calif.; Rush Medical College, Chicago, 1884; for many years connected with the Eitel Hospital, Minneapolis; aged 81; died, February 2, of carcinoma of the hip.

Juanita Isabella Lea, Tryon, N. C.; Michigan College of Medicine and Surgery, Detroit, 1906; aged 70; died, February 28, of pneumonia.

David S. Lillibridge, Mesopotamia, Ohio; Western Reserve University Medical Department, Cleveland, 1891; aged 74; died, February 28, of cerebral hemorrhage.

Oscar M. Longenecker, Kansas City, Kan.; Kansas City (Mo.) Medical College, 1899; member of the Kansas Medical Society; at one time instructor in materia medica at his alma mater; for two years served as superintendent of schools for Miami County and for many years as a member of the local school board of Rosedale; on the staff of the Vineyard Park Hospital, Kansas City, Mo.; aged 76; died, February 26, of coronary occlusion.

Charles Davis Luckett, English, Ind.; Jefferson Medical College of Philadelphia, 1889; aged 81; died, March 13, of arteriosclerosis of the coronary artery.

George Thomas McMahon, Waukee, Iowa; Drake University Medical Department, Des Moines, 1895; member of the Iowa State Medical Society; aged 82; died, February 22, in Des Moines of cerebral hemorrhage.

Dennis Miller, Dallas, Texas; College of Physicians and Surgeons, Baltimore, 1890; aged 76; died, February 20, of cerebral hemorrhage and arteriosclerosis.

Charles Lynn Morris, Los Angeles; Hahnemann Medical College of the Pacific, San Francisco, 1913; aged 55; died, February 2.

John Henry Morrison, Kirkland, Wash.; Northwestern University Medical School, Chicago, 1898; aged 69; died in February at the U. S. Marine Hospital, Seattle.

William Howard Morrow, Bellwood, Pa.; Jefferson Medical College of Philadelphia, 1886; member of the Medical Society of the State of Pennsylvania; for many years served on the school board; in 1936 at a meeting of the Sixth Councilor District of the Medical Society of the State of Pennsylvania received a certificate for fifty years of medical practice; aged 85; died, February 4, in a hospital at Altoona of general arteriosclerosis and a fracture of the right hip due to a fall.

Henry L. Mosher, Lyndhurst, N. J.; University and Bellevue Hospital Medical College, New York, 1925; member of the Medical Society of New Jersey; member of the board of health of Lyndhurst; served on the staffs of the Hackensack (N. J.) Hospital and the West Hudson. Hospital, Kearney; aged 43; died, February 22.

Donald A. Murray ✠ Seattle; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1906; member of the American Academy of Orthopaedic Surgeons; fellow of the American College of Surgeons; served as vice president of the Pacific Northwest Orthopedic Society; served during World War I; aged 63; on the visiting staffs of the King County Hospital, Unit number 1 (Harborview), and the Swedish Hospital, where he died, February 3, of hypertension and arteriosclerosis with congestive failure.

Jens L. Ohnstad, McIntosh, Minn.; Minneapolis College of Physicians and Surgeons, 1903; member of the Minnesota State Medical Association; owner of the City Hospital; aged 74; died, February 23, of cerebral hemorrhage.

Marshall John Payne ✠ Staunton, Va.; Jefferson Medical College of Philadelphia, 1893; formerly vice president of the Medical Society of Virginia; past president of the Augusta County Medical Society; fellow of the American College of Surgeons; past president of the Association of Surgeons of the Chesapeake and Ohio and Norfolk and Western Railways; past president of the Rotary Club of Staunton; aged 71; died, February 11, of coronary occlusion.

Wesley Hamilton Peck, Highland Park, Ill.; College of Physicians and Surgeons, New York, 1888; member of the Illinois State Medical Society; past president of the Chicago Ophthalmological Society; served on the staffs of the Oak Park (Ill.) Hospital, Columbus, John B. Murphy and Mercy hospitals, Chicago, and St. Francis Hospital, Evanston; otolaryngologist to the Atchison, Topeka and Santa Fe Railway Company; aged 79; died, February 26, of myocarditis and hypertension.

Colvin C. Perdue, Mobile, Ala.; Tulane University of Louisiana School of Medicine, New Orleans, 1919; member of the Medical Association of the State of Alabama; fellow of the American College of Surgeons; on the staffs of the City Hospital, Mobile Infirmary and the Providence Hospital; aged 51; died, February 4, of chronic myocarditis and cirrhosis of the liver.

Sherman Rogers, Tulare, Calif.; College of Physicians and Surgeons, medical department of the University of Southern California, Los Angeles, 1917; member of the California Medical Association; served during World War I; visiting physician to the Tulare and East Tulare hospitals; aged 51; died, February 19, of heart disease and cirrhosis of the liver.

George Francis Rozelle Jr. ✠ Dallas, Texas; Baylor University College of Medicine, Dallas, 1939; aged 33; died recently of pulmonary tuberculosis.

Robert Randolph Sisson ✠ Kitzmiller, Md.; Medical College of Virginia, Richmond, 1929; aged 43; died, February 21, of acute dilatation of the heart and chronic myocarditis.

James Brown Smith, Memphis, Tenn.; University of Tennessee Medical Department, Nashville, 1893; aged 71; died, February 6.

Alonzo De Moines Snyder, Huntington Park, Calif.; Kentucky School of Medicine, Louisville, 1897; member of the California Medical Association; aged 71; died, February 16, in the California Hospital, Los Angeles, of carcinoma.

Roscoe Conkling Tarbell, Groton, N. Y.; Syracuse University College of Medicine, 1901; member of the Medical Society of the State of New York; served as health officer; aged 67; died, March 8, of heart disease.

Joseph Taliaferro Taylor, Adams Run, S. C.; Medical College of the State of South Carolina, Charleston, 1899; member of the South Carolina Medical Association; past president and formerly member of the state board of medical examiners; in 1934 was appointed a member of the Sanitary and Drainage Commission of Charleston County; aged 72; died, February 20, of heart disease.

George Allingham Trueman, Munising, Mich.; Rush Medical College, Chicago, 1894; first mayor of Munising, 1915-1916; formerly chairman of the Alger county board of supervisors, county coroner and president of the Munising township board of education; served on the staff of the Munising Hospital; aged 72; died suddenly, February 22, of heart disease.

Charles Edward Tucker, Metropolis, Ill.; St. Louis College of Physicians and Surgeons, 1892; served as local surgeon for the Chicago and Eastern Illinois Railroad Company; captain in the medical reserve corps of the U. S. Army not on active duty; served during World War I; for many years examining physician for the Veterans Bureau; aged 74; died, February 20, of heart disease.

Lynn Seeley Van Gorder, Lynden, Wash.; University of Oregon Medical School, Portland, 1930; member of the Washington State Medical Association; member of the staffs of St. Joseph's Hospital and St. Luke's Hospital, Bellingham; aged 38; died, February 7, of carcinoma of the stomach following ulcers.

Vincent Charles Vielhaber ✠ St. Louis; St. Louis University School of Medicine, 1938; diplomate of the National Board of Medical Examiners; aged 29; died, February 25, in St. Mary's Hospital of glomerulonephritis and hypertensive vascular disease.

Arthur Edward Walters ✠ Springfield, Ill.; St. Louis University School of Medicine, 1905; at one time vice president of the Illinois State Medical Society and president of the Sangamon County Medical Society; served for two terms as president of the Springfield park board; aged 60; died, March 1, of coronary thrombosis.

Joshua Thomason Ward, Laredo, Texas; University of Texas School of Medicine, Galveston, 1898; member of the State Medical Association of Texas; aged 69; died, February 25.

Archibald A. White, New York; Fordham University School of Medicine, New York, 1920; aged 48; died, February 26.

James Richard Williams, Richmond, Va.; Medical College of Virginia, Richmond, 1898; member of the Medical Society of Virginia; at one time demonstrator of operative surgery at his alma mater; aged 67; died, February 18, of hypertensive cardiovascular disease.

D. L. Wood, Killeen, Texas; College of Physicians and Surgeons, Dallas, 1905; member of the State Medical Association of Texas; aged 71; died, February 23, in the Kings Daughters Hospital, Temple, of myocarditis and diabetes mellitus.

Michael George Yeager ✠ Mercer, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1897; for many years house physician on the staff of the Mercer County Home and Hospital; on the staff of the Mercer Cottage Hospital; served during World War I; physician for the Bessemer and Lake Erie Railroad Company; aged 69; died, February 17, of carcinoma of the lung.

Correspondence

HOUSSAY RESENTS CENSORSHIP OF MEDICAL PERIODICALS ADDRESSED TO ARGENTINA

To the Editor:—The censorship of the United States has delayed the arrival of some issues of The Journal of the American Medical Association, in the June 20, 1942 issue of which, page 615, the censor has cut out a paper. I have had to write several letters about the censorship problem, and I would appreciate your printing this one.

Since the beginning of the war I have been a firm supporter of the Allied countries, especially France, England and the United States. I have expressed my sympathy in public whenever the occasion arose. During the Spanish civil war I presided over the committee of aid to the Spanish intellectuals. Two years ago I attended for the first time in my life, together with the ex-president of the Argentine Republic, Dr. M. T. de Alvear, the leader of the Socialist party, Dr. N. Repetto, and the ex-minister of foreign affairs, Dr. J. M. Cantilo, a public political meeting, the "Cabildo Abierto" of "Acción Argentina," over which we presided and in which we spoke in favor of the Allied cause.

When the United States and Brazil entered the war I expressed openly my warm feelings in sympathy with these countries and I am a supporter of the most thorough cooperation of our country in the war.

I point out all these circumstances in order that you may understand the painful impression produced on me by the methods employed by the Board of Censors of the United States concerning the medical and biologic journals, which has decided to forbid the mailing to this country of the November 1942 issue of the *Proceedings of the Society for Experimental Biology and Medicine* because it contains some articles which in the opinion of the Board of Censors may be of use to the enemy. Such procedure, as I understand, contradicts the most elemental principles of freedom.

It is practically impossible to forbid the knowledge of medical methods once they have been published in scientific journals. If some procedure is to be kept secret, and I think it is inhuman to keep secrets in medicine, it must not be published anywhere. The inefficiency of the actual measure is evident, since the journals containing the "secret articles" can be brought from other South American countries by our ships or by other foreign ships, or we can go to read them or ask for photostatic copies of them at any moment (Santiago de Chile is only six hours from Buenos Aires and Montevideo one hour).

Besides, we may know what is being published in the United States by the English medical and biologic journals, to which no censorship is applied. Also we may know what is published in the American journals by the abstracts published in the Spanish journals. Censorship to medical and biologic journals has not been applied even by Germany, as we received the scientific journals from that country until the war with Russia began. Since then we have received the abstracts of German papers which are published in the Spanish medical journals. So that with the present methods of censorship the United States, a friendly country, is the only country in the world that restricts the diffusion of scientific knowledge in Latin America.

Of course, I can by no means agree that the journals objected to should be sent to me with any articles or paragraphs cut out or crossed out as the Board of Censors has proposed. Such procedures resemble those used by the Nazis when they burned books. I prefer the numbers to be held there for the duration of the war better than to receive them with such mutilations. I would never accept such procedure.

To forbid that a method of medical treatment should be known by other men, friends or enemies, is contrary to Christian morality, to medical ethics and to the high principles of freedom and civilization. Not even the Nazis have committed such a fault.

It would be a stroke of puerility and foolish pride to believe that the war can be won by preventing some medical papers from being known by the enemies.

I hope for the sake of the well earned prestige of the United States, and in view of the high moral principles for which that country struggles, that these methods will soon be changed.

With my sincerest wishes for the victory of the Allies, I am,

Respectfully yours,

B. A. Houssay, Buenos Aires.

EXTERNAL USE OF COD LIVER OIL

To the Editor:—In the report of the Council on Pharmacy and Chemistry on the status of the external use of cod liver oil, The Journal, March 6, I noted two references to my publications on this subject. As these references give a somewhat misleading impression of the scientific findings, I think they should be clarified.

In the paper published in the October 1941 issue of *Annals of Surgery* Dr. Emanuel Papper and I reported that:

"In the vitamin A deficient groups, A and G, receiving no cod liver oil locally, the symptoms of vitamin deficiency persisted after wounding. These symptoms included loss of weight, fur changes, anorexia, humpback, crusting of the nose and eyes, and xerophthalmia. The average loss of weight in these two groups was 32 Gm. during the period of observation. In group C, where the wounds were treated with cod liver oil, there was an average gain of 16 Gm. during the experimental period. Although the symptoms of vitamin A deficiency persisted in some of the animals, they were much less severe and less frequent. This was not due to licking the oil off the wounds, as the metal caps placed on the wounds prevented the animal from reaching the wound with his paws or tongue."

The gain in weight plus the fact that the symptoms of vitamin A deficiency were improved and less frequent than in the group that received no cod liver oil locally seems to indicate that the vitamin A derived from the cod liver oil applied locally cleared up the symptoms of vitamin A deficiency. This seems to be a definite indication that vitamin A and/or D may be absorbed by the local application of cod liver oil.

The following statement appears in the report of the Council:

"Brandaleone and Papper studied microscopically the scars occurring in their animals but report no differences which may have occurred as a result of varying treatments."

Nowhere in our article is any mention made of microscopic study of scars. However, there is a paragraph which reads as follows:

"In the wounds treated with cod liver oil, the edges were even in contrast to the irregular edges in the untreated wounds; profuse granulation tissue was evident; and epithelization occurred earlier than in the untreated group, and was more abundant. The wounds finally closed leaving a small, white scar."

This was not referring to any microscopic study. However, a microscopic study was made and was reported as part of a thesis for the degree of medical science at New York University in 1938. The results may be thus summarized:

Microscopic sections of the wounds of normal and vitamin A deficient rats were studied. These rats were subdivided into groups that had cod liver oil applied to the wounds and those that had nothing applied to the wounds. The vitamin A deficient group with nothing applied to the wounds showed pro-

nounced retardation in healing. The groups that received cod liver oil on their wounds showed lipoid material in the interstitial tissue. The normal group, irrespective of the use of cod liver oil, showed much more exuberant granulation tissue and earlier evidence of healing than the vitamin A deficient group of rats. However, in the vitamin A deficient group, those rats that received cod liver oil locally developed evidence of granulation tissue earlier than the group that received nothing locally. In addition, in the group of vitamin A deficient rats with cod liver oil applied locally the wounds showed evidence of more rapid healing and none remained unhealed as long as the group treated received no cod liver oil locally.

The fact that lipoid material could be seen in the interstitial tissues is another point indicating the absorption of cod liver oil when applied locally.

HAROLD BRANDALEONE, M.D., New York.

MEAT PRODUCTS NOT A CAUSE OF TRANSFUSION REACTIONS

To the Editor:—My attention has been called to a quotation from the magazine *Good Health* which represents a gross misinterpretation of findings secured in a study on experimental blood transfusion in dogs. I have noted and reported that blood secured from a donor recently fed a mixed carbohydrate-protein meal, i. e. one to two hours prior to transfusion, will cause a definite reaction in a fasted recipient despite the fact that the bloods were mutually comparable, that the incidence of reactions was less frequent when the donor was fed protein alone, still less so when fed carbohydrate or when fasted, and that reactions never occurred when a fat fed donor was used. Furthermore, a transfusion reaction was never observed to occur when both donor and recipient animals were fed prior to transfusion. I employed as a protein meal the whites of four eggs, as a carbohydrate meal 100 Gm. of glucose, and the mixed meal was a combination of the two.

I have felt that this work might provide an explanation of clinically encountered transfusion reactions of obscure origin and I indicated that overeating on the part of a donor shortly before he gives blood might lead to unhappy consequences for the recipient. Nowhere in these studies have I indicated that meat or meat products possess any toxic properties. Therefore the statement as printed in *Good Health* represents a complete distortion and is totally without foundation.

A. C. IVY, PH.D., M.D.,
Northwestern University, Chicago.

MARMOLA

To the Editor:—In the April 17 issue of THE JOURNAL, page 1287, there is a misstatement of fact. You have listed Dr. Benjamin H. Schlomovitz as professor of pharmacology and toxicology, Marquette University Medical School, among those who testified in behalf of Marmola. Dr. Schlomovitz has never been specifically professor of pharmacology and toxicology at the Marquette University School of Medicine. From 1920 to 1923 Dr. Benjamin Schlomovitz was professor of physiology and pharmacology, but for the last twenty years he has not been associated with the Marquette University School of Medicine. This information has been given to Dr. A. J. Carlson, professor of physiology at the University of Chicago.

EBEN J. CAREY, M.D., Milwaukee.
Dean, Marquette University
School of Medicine.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, May 1, page 57.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II,* August 2-4. *Part III,* June and also at various times at various centers having 5 or more eligible applicants. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written,* Philadelphia, Sept. 27. *Oral,* Philadelphia, Nov. 5-6. Final date for filing application is August 16. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* Philadelphia, May 26-29 and Chicago, June 9-11. *Written.* Oct. 18. Final date for filing application is Sept. 1. Asst. Sec., Dr. William A. Werrell, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OPHTHALMOLOGY: *Parts I and II.* New York City, June 4-5, October 8-9. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF PEDIATRICS: *Written.* Locally, Oct. 8. *Oral.* New York, Nov. 20-21. Final date for filing application is Aug. 1. Starting July 1, 1943, Group I will be abolished. Sec., Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Strain Accelerating Preexisting Pathologic Condition.—The workman, a man 64 years of age, 5½ feet tall and weighing 200 pounds, apparently had diabetes and arteriosclerosis. In the course of his employment in assembling a cabinet it was necessary for him to enter the cabinet and work in a cramped position to place screws in place on the inside. The temperature in the room in which he was working was 75 degrees but it was much warmer inside the cabinet, over which there were steam pipes. He was perspiring freely. His knees buckled and he fell against another employee working with him. A few hours later he died from a cerebral hemorrhage. The industrial commission of Ohio refused an award of compensation, and suit was brought for compensation in the court of common pleas of Hamilton County, which affirmed the finding of the commission and an appeal was perfected to the court of appeals of Ohio, Hamilton County.

That an award of compensation, said the court, is proper if the deceased met his death because of an injury received during and because of the employment causing acceleration of a preexisting disease cannot be doubted. Arteriosclerosis is what is commonly called hardening of the arteries, which, owing to excess of lime deposits, lose their elasticity and thus retard the flow of blood through them. They become brittle and if by reason of strain or exertion the pressure of blood is increased may crack or break. The arteries in the brain are in many cases very small and this brittleness presents a condition of extreme danger to the individual, since a break in one of such arteries is almost certain to cause death on the flooding of the brain area. It is the undisputed evidence of the physicians who attended the deceased workman that while he was working and due to the strain and increased blood pressure and the condition of his arteries, he died because one of the arteries in the brain cracked or split under such pressure, flooding his brain and causing his death a few hours after the injury. If the bones of the workman had become porous or unduly brittle because of disease and, while trying to drive home a screw his shoulder blade had broken, it can hardly be supposed that compensation should be denied. What difference is there in actual effect in the two situations—a brittle blood vessel, a brittle bone? That the strain that was present in this case was within the meaning of the term "injury" as used in the Ohio workmen's compensation act the court felt clear, since there the term

is defined to "include any injury received in the course of, and arising out of, the injured employee's employment" (117 Ohio Laws, p. 109).

The appelate court accordingly reversed the judgment against the claimant and remanded the cause for a new trial.—*Saupe v. Industrial Commission, 44 N. E. (2d) 282 (Ohio, 1942).*

Dental Practice Acts: Power of Licensing Board to Define by Regulation Standards of Professional Conduct.—A clothing store in New York operated a "dental credit service" for its customers for dental work to be supplied by cooperating dentists. The "service" would discount by approximately 30 per cent the fee the dentist would fix, paying the balance in cash to the dentist and presumably eventually collecting in full from the store customer. Cherry, a dentist licensed to practice in New York, cooperated in this plan and in two years obtained about 25 patients by such means. Proceedings were instituted to revoke or suspend his license to practice dentistry on the grounds that he was guilty of "unprofessional conduct" because by reason of his connection with the credit service he made use of and employed the dental credit agency as advertising solicitors and free publicity press agents to obtain patients. The dental board found him guilty and recommended that he be merely reprimanded because he ceased his connection with the service as soon as he was notified that the service was deemed objectionable by the board. The board of regents of New York, however, rejected the recommendation of reprimand and instead suspended for six months Cherry's license to practice. Cherry instituted court proceedings to set aside the order of the board of regents. The matter eventually reached the Court of Appeals of New York.

The New York dental practice act, said the Court of Appeals, authorizes, as far as is here material, the revocation or suspension of a license to practice dentistry or the reprimanding of a licentiate who (1) has advertised for patronage by means of hand bills, posters, circulars, stereopticon slides, motion pictures, radio or newspapers or (2) has been otherwise or in any other way guilty of unprofessional conduct. The acts which Cherry is charged with committing, unless they constitute unprofessional conduct, are not embraced in the grounds for disciplinary action stated in the dental practice act, and the order of the board of regents suspending Cherry's license for six months must be annulled unless it appears that Cherry has been guilty of such conduct. Cherry argued that the term "unprofessional conduct" as specified in the act as a cause for the revocation or suspension of a license is so vague that the legislature has in effect delegated to the board of regents unfettered discretion to determine what shall be sufficient cause for disqualification of a dentist. The legislature, of course, answered the court, could neither grant to an administrative board or quasi-judicial tribunal the power to impose a penalty on a dentist for an act or conduct not defined in advance nor the power to define, in accordance with an unfettered discretion, the acts or conduct which would justify disciplinary action against a dentist.

Such unlimited power, continued the court, is not claimed by the board. It claims that whether an act or conduct of an accused dentist is "unprofessional" may be determined by the standards recognized by the dental profession as "ethical" and that the legislature may properly leave to a quasi-judicial body the task of ascertaining and applying those standards in a particular case. Hence the legislature, so it argues, has properly delegated to it power to define "ethical" professional standards and to adopt rules and regulations prohibiting acts or conduct which do not, in its opinion, conform to such standards. Acting in accordance with such a contention the board has adopted "regulations governing dental advertising" which, in effect, provide that stated forms of dental advertising are unprofessional. Among these is "employing or making use of advertising solicitors or free publicity press agents." These regulations are an attempt to define "ethical" professional standards. The specific supervisory powers of the board of regents over the practice of dentistry enable it, within reasonable limits, to prescribe canons by which conduct deemed by it, in the exercise of fair judgment, to be unprofessional and objectionable may, in the interest of rescuing that profession from vulgar commercialism, be banned. The field in which that power may be exercised is nonetheless subject to restriction by the legislature, and the board of regents cannot by the exercise of that power enlarge on the causes set out in the act for which the license of a dentist may be revoked or suspended.

The court then referred to the fact that that section of the dental practice act enumerating causes for disciplinary action as it was originally enacted (Laws 1927, ch. 85) provided for disciplinary action in instances in which the accused dentist had "been guilty of unprofessional or immoral conduct," or of gross ignorance or inefficiency in his profession, "or of fraud or deceit in procuring admission to practice." The statute in that form, said the court, placed no restriction on the means of publicity or the form of advertising that a dentist might use, but the board of regents adopted regulations declaring that certain forms of advertising were improper and unprofessional and this court in *Matter of Dr. Bloom Dentist, Inc.* v. *Cruise,* 259 N. Y. 358, 182 N. E. 16, approved the assumption of that power by the board of regents. Thereafter the legislature amended that particular section, adding as a specific cause for the disciplining of licentiates "that the dentist is guilty of untrue, fraudulent, misleading or deceptive advertising." Regulations promulgated by the board purported to impose more drastic restrictions. Since the legislature had undertaken to impose a specific restriction on dental advertising, this court in *Brown* v. *University of State of New York,* 266 N. Y. 598, 195 N. E. 217, held that the board of regents could not adopt different or additional restrictions prohibiting the use of particular means of publicity, that the regulation of the board of regents was for that reason invalid and that the statute imposing specific restriction on advertising impliedly sanctioned advertising that did not violate the specific statutory restrictions. Thereafter, the legislature itself determined that the means of publicity which the board of regents had attempted to ban by regulation should, with some exceptions, be banned by statute and amended this particular section accordingly as it now reads, in effect, prohibiting advertising for patronage by means of hand bills, posters, circulars, stereopticon slides, motion pictures, radio or newspapers.

It should be noted, continued the court, that in *Brown* v. *University of State of New York,* supra, this court did not hold that the challenged rule or regulation of the board of regents was unreasonable. We did not question that in the exercise of the police power the state could place such a restriction on dental advertising. We held there, however, that the regulation of the board of regents was invalid only because the legislature having itself fixed a standard for dental advertising and having provided that failure to abide by such standard was ground for revocation of a license had by necessary implication sanctioned advertising which did not transgress the express ban of the statute and had not delegated to the board of regents power to provide other standards of permissible advertising or to create additional grounds for revocation of license. Though the legislature has thereafter by amendment of the statute placed a ban on the use of some of the means of advertising which the board of regents had attempted to ban by regulation, the ban is not complete with respect to all forms of advertising. The legislature has specifically banned advertising "for patronage by means of hand bills, posters, circulars, stereopticon slides, motion pictures, radio or newspapers." Publicity or advertising by other means is still impliedly sanctioned by the statute. The reasons which dictated the decision in *Brown* v. *University of State of New York* constrain the courts, with even more compelling force, to declare invalid any assumption by the board of regents, such as is here involved, to ban by rule or regulation such other means of publicity or advertising.

The board of regents, continued the court, cannot suspend or revoke the license of a dentist for any cause not specified in the dental practice act. It cannot ban as unprofessional conduct conduct which has been impliedly sanctioned by the legislature. Nor can it by regulation ban, as unprofessional, conduct which, though not expressly or impliedly sanctioned by the legislature, accords with the standards accepted as

proper by the consensus of practitioners in that field. Even so there remains a large field in which the board of regents may by the exercise of its specific supervisory power prescribe canons by which conduct deemed by it, in the exercise of fair judgment, to be unprofessional and objectionable is banned. Though a breach of a regulation or canon prescribed by the board of regents is not of itself, and in all cases, sufficient ground for discipline, it may be sufficient if the regulation or canon is reasonable and the conduct which has been specifically banned by the regulation may fairly be classed as unprofessional. The rule adopted by the board that the "employing or making use of advertising solicitors or free publicity press agents" constitutes unprofessional conduct may be invalid under *Brown* v. *University of State of New York* if the principles announced in that case were rigidly applied. However, it must be considered that the employment and use of advertising solicitors and free publicity press agents are ordinarily for purposes and in a manner which would be regarded as unprofessional and improper, and the dental practice act should not be construed as an implied scanction of such employment or use. Nonetheless, there may be occasions when advertising solicitors or free publicity press agents may be employed or used for purposes and in a manner that could not reasonably be regarded as unprofessional and the board of regents cannot by general regulation ban proper use and improper use indiscriminately. The court apparently believed that under the circumstances Cherry's conduct in his connection with the credit service was not unprofessional and accordingly ordered, in effect, that the order of the board of regents suspending Cherry's license be set aside.—*Cherry v. Board of Regents of University of State of New York, 44 N. E. (2d) 405 (N..Y., 1942.)*

Society Proceedings

COMING MEETINGS

HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION, CHICAGO, BEGINNING JUNE 7. DR. OLIN WEST, 535 NORTH DEARBORN ST., CHICAGO, SECRETARY.

American Association of Genito-Urinary Surgeons, Stockbridge, Mass., June 10-12. Dr. Charles C. Higgins, 2020 East 93d St., Cleveland, Secretary.

American Association of Industrial Physicians and Surgeons, Rochester, N. Y., May 25-27. Dr. E. C. Holmblad, 28 East Jackson Blvd., Chicago, Managing Director.

American Association on Mental Deficiency, New York, May 12-15. Dr. Neil A. Dayton, Mansfield Training School, Mansfield Depot, Conn., Secretary.

American College of Radiology, Chicago, June 6. Mr. Mac F. Cahal, 540 North Michigan Blvd., Chicago, Executive Secretary.

American Gynecological Society, Hershey, Pa., May 31-June 2. Dr. Howard C. Taylor Jr., 842 Park Ave., New York, Secretary.

American Ophthalmological Society, Hot Springs, Va., June 10-12. Dr. Walter S. Atkinson, 129 Clinton St., Watertown, N. Y., Secretary.

American Psychiatric Association, Detroit, May 10-13. Dr. Winfred Overholser, St. Elizabeth's Hospital, Washington, D. C., Secretary.

American Psychoanalytic Association, Detroit, May 9-11. Dr. Leo H. Bartemeier, General Motors Bldg., Detroit, Secretary.

American Society of Clinical Pathologists, Chicago, June 4-6. Dr. Alfred S. Giordano, 531 North Main St., South Bend, Ind., Secretary.

American Surgical Association, Cincinnati, May 13-14. Dr. Warfield M. Firor, Johns Hopkins Hospital, Baltimore, Secretary.

Connecticut State Medical Society, New Haven, May 25-27. Dr. Creighton Barker, 258 Church Street, New Haven, Secretary.

Georgia, Medical Association of, Atlanta, May 11-14. Dr. Edgar D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.

Illinois State Medical Society, Chicago, May 18-20. Dr. Harold M. Camp, 224 South Main St., Monmouth, Secretary.

Massachusetts Medical Society, Boston, May 24-26. Dr. Michael A. Tighe, 8 Fenway, Boston, Secretary.

Minnesota State Medical Association, Minneapolis, May 17-19. Dr. B. B. Souster, 493 Lowry Medical Arts Bldg., St. Paul, Secretary.

Mississippi State Medical Association, Jackson, May 11-13. Dr. T. M. Dye, Clarksdale, Secretary.

New Hampshire Medical Society, Manchester, May 11. Dr. Carleton R. Metcalf, 5 South State St., Concord, Secretary.

New Jersey, Medical Society of, Newark, May 25-26. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.

North Carolina, Medical Society of the State of, Raleigh, May 10-12. Dr. Roscoe D. McMillan, Red Springs, Secretary.

North Dakota State Medical Association, Bismarck, May 10-11. Dr. L. W. Larson, 221 Fifth Street, Bismarck, Secretary.

Oklahoma State Medical Association, Oklahoma City, May 11-12. Dr. Lewis J. Moorman, 210 Plaza Court Bldg., Oklahoma City, Secretary.

Rhode Island Medical Society, Providence, June 2-3. Dr. William P. Buffum, 122 Waterman St., Providence, Secretary.

West Virginia Medical Association, Charleston, May 17-18. Mr. Charles Lively, 1031 Quarrier St., Charleston, Executive Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Fifteenth Annual Meeting, held in Chicago, Nov. 6 and 7, 1942

The President, DR. ARLIE R. BARNES, Mayo Clinic, Rochester, Minn., Presiding

(Continued from page 60)

The Nature and Properties of Antirenin

DR. HARRY GOLDBLATT, YALE J. KATZ, PH.D., DR. HARVEY A. LEWIS, EVELYN RICHARDSON, A.B., A. GUEVARA-ROJAS and DR. FRANK GOLLAN, Cleveland: The daily intramuscular injection into dogs of a small quantity (1 arbitrary unit) of active hog renin for three to five months results in the development of a factor in the blood which prevents the pressor effect of a large dose (20 or more units) of hog renin when it is injected intravenously into such dogs. The intravenous injection of hog renin does not result in the development of antirenin in the serum. In our laboratory a unit of renin is defined as the minimum quantity which will raise the direct mean femoral blood pressure of an unanesthetized trained dog weighing between 10 and 20 Kg., by 30 mm. of mercury. To the effective substance in the blood Wakerlin and Johnson have given the name antirenin. The development of antirenin can be hastened by the adminstration of large quantities of renin. The blood serum of such dogs is also capable of inactivating or destroying renin "in vitro," so that a mixture of renin and antiserum does not produce the usual pressor effect when it is injected intravenously into normal dogs. We have found that the effect of renin antiserum is virtually instantaneous both "in vitro" and "in vivo" and that the reaction does not require eighteen hours or more, as first suggested by Wakerlin and Johnson. Hog renin antiserum is effective both "in vitro" and "in vivo" against the renin of other animals but not against human renin. In dogs with the highest antirenin titer the intravenous injection of angiotonin (hypertensin) still continues to be as effective in raising the blood pressure as in normal animals. There is no increase in hypertensinase (angiotoninase or angiotonin inhibitor) in renin antiserum. The prehypertensin level of renin antiserum is equal to that of normal animals.

DISCUSSION

DR. G. E. WAKERLIN, Chicago: We agree with Dr. Goldblatt that the in vitro neutralization of renin by antirenin occurs practically immediately. We prefer to use the etherized bilaterally nephrectomized dog for assaying renin, although the unanesthetized dog is a satisfactory assay animal. The use of the term "kidney cortex equivalent" may be somewhat ambiguous. However, as our renin solutions are prepared by Dr. Johnson they are relatively constant in pressor activity, so that to us renal cortex equivalent has meaning. We also found that the development of antirenin depends on the amount and frequency of administration of renin. It is interesting to note that in the rabbit antirenin can be produced by intravenous injections of renin as we have shown but in the dog for some reason intravenous injections of renin do not give rise to antirenin. The titer of antirenin will vary somewhat in different dogs. In our first therapeutic experiment 1 dog continued to show antirenin in his serum for a year after injections of hog renin were stopped, although his blood pressure returned to the pretreatment hypertensive level four or five months after the discontinuance of treatment. We have treated 4 hypertensive dogs with a second course of partially purified hog renin with good antirenin titers developing early but with no reduction in blood pressure until the dosage of partially purified hog renin extract was doubled. In these experiments we also treated 1 hypertensive dog with highly purified hog renin and another hypertensive animal with smaller doses of partially purified hog renin without any decreases in blood pressure, although antirenin in good titer developed early in treatment. We have treated a group of hypertensive dogs with large doses of highly purified hog renin and have seen reductions in blood pressure somewhat less satisfactory than we have previously seen with smaller doses of partially purified hog renin, suggesting that the antihypertensive activity is due to some constituent of the extract other than renin. Although one of these animals treated

with highly purified hog renin showed a satisfactory reduction in blood pressure early in treatment, no antirenin appeared in his serum until late in the course of therapy. We are also completing an experiment in which 2 out of 3 hypertensive dogs showed blood pressure reductions with large doses of heat inactivated hog renin, although no antirenin ever appeared in their serums. In our prophylactic experiments we have also obtained evidence against antirenin being the mechanism involved in the successful prophylaxis of experimental renal hypertension. Thus prophylaxis apparently succeeded in 1 of the dogs given dog renin and in 1 of the animals receiving heat inactivated hog renin, although antirenin never appeared in their serums. Moreover, the dogs protected by hog renin and by rabbit renin have remained normotensive for many months after antirenin disappeared from their serums following treatment. In spite of these objections to the antirenin hypothesis, however, the therapeutic and prophylactic effects of partially purified hog renin in experimental renal hypertension may be due to antirenin. We are now beginning a group of experiments which should go a long way toward determining whether antirenin is the mechanism, whether some other type of immune or antihormone response to renin is involved, or whether the antihypertensive activity is due to some constituent of the renin solutions other than renin.

DR. A. C. CORCORAN, Indianapolis: Human, monkey and baboon renins and renin activators interact to yield angiotonin, while their renin activators do not interact with other mammalian renins. One might, then, suggest that renins from one or the other of these species be used for studies of antirenin in human beings, monkeys and baboons. Our tentative use of the term "renin activator" was meant only to signify that in its absence renin was inactive and, when the reaction was shown to be enzymatic, the term was retained until the nature of the reaction was fully elucidated. Complete evidence that renin, an enzyme, acts on alpha globulin as substrate will be presented by Drs. Plentl and Page. The so-called renin activator is identical with alpha globulin and, as suggested by Page and Helmer to this group three years ago, is the substrate on which renin acts to liberate angiotonin. With regard to the pyrogenicity of renal extracts used in the experimental treatment of arterial hypertension, Dr. Page and his associates have described their occurrence and course in some detail. These "nonspecific" reactions (I object to the term nonspecific for a mechanism which follows a predictable course of altered physiology) do not account for all the effects observed with the extracts, since their occurrence has not been of the daily or weekly character which occurs with injections of pyrogens such as typhoid vaccine. Such activity did participate in some of our results, but that we had accepted the wholly "nonspecific" activity of the extracts was not, I am sure, the impression that Dr. Goldblatt wished to convey.

DR. HARRY GOLDBLATT, Cleveland: Although Dr. Wakerlin insists that antirenin is not the factor responsible for the prevention and cure of experimental renal hypertension which can be accomplished by daily intramuscular injections of renin, yet we are of the belief that our own experiments do definitely indicate this possibility. More work will have to be done to prove this important point. I can tell Dr. Corcoran that we are already using the Macaque monkey in our studies, but it is too early to report results.

Nature of Renin Activator and the Reaction Between It and Renin

DRS. ALBERT A. PLENTL and IRVINE H. PAGE, Indianapolis: Several years ago investigations conducted in the Lilly Clinic showed that renin was vasoinactive unless allowed to interact with a globulin fraction of plasma with the formation of angiotonin. While several reasons were given for the thesis that the reaction was enzymatic in nature, no strict proof was presented that this was so. Braun-Menendez suggested the same thesis but also offered no strict proof. Such proof can be furnished only by a kinetic analysis.

Enzymatic reactions are the biologic counterparts of catalytic reactions; hence the catalyst (enzyme) does not take part directly in the reaction, yet its presence is essential for the reaction to occur. Such reactions must follow the course prescribed by a monomolecular reaction (first order reaction).

The action of renin on renin activator was studied and the reaction constant (velocity) found to be directly proportional to the renin concentration. Plotting the logarithm of the concentration of the product (angiotonin) against time produces a straight line. These observations constitute proof that the reaction rigorously satisfies the requirements of a monomolecular reaction. Renin is therefore the enzyme and renin activator the substrate.

Renin activator is usually obtained from the globulin fraction of hog or cow serum. Electrophoretic analysis of a representative sample indicated that it is a mixture of alpha, beta and gamma globulins and a small amount of albumin, its major constituent being alpha globulin (56 per cent). Repeated fractional precipitation of globulins within narrow limits of ammonium sulfate led to the isolation of each constituent in reasonably pure form. Incubation of renin with beta and gamma globulins as well as albumin did not give any angiotonin, while alpha globulin gave twice as much as the original "renin activator." The substance referred to as "renin activator" is therefore identical with or has the same electrophoretic mobility as alpha globulin.

An appreciable quantity of angiotonase could be demonstrated in the albumin fraction, while none could be found in the globulins.

Mechanism of Auricular Paroxysmal Tachycardia

DRS. PAUL S. BARKER, FRANK N. WILSON and FRANKLIN D. JOHNSTON, Ann Arbor, Mich.: Auricular paroxysmal tachycardia cannot readily be induced or studied in experimental animals. Speculations as to its nature must be based on pertinent observations on man. We wish to examine the evidence that this disorder is due to circus rhythm in the auricles, the path of which involves one of the specialized auricular nodes.

The available evidence suggests that somehow these nodes are involved in the abnormal mechanism. In all but 2 of 100 unselected cases the form of the auricular deflections was consistent with their origin in or near the auriculoventricular node or some part of the sinoauricular node. The slowing and termination of attacks by vagal stimulation and by digitalis are most logically explained by their effects on the nodes, as is the occasional acceleration of the rate by exercise. Furthermore, atrioventricular block is rare, especially in paroxysms arising in or near the auriculoventricular node.

That the abnormal mechanism is a circus rhythm is suggested by the abrupt onset and termination of attacks, by the remarkable stability of the rate, by the slowing and termination of attacks by quinidine and by the occasional alternation of cycle length.

Nevertheless the circus rhythm of auricular paroxysmal tachycardia must be of a special kind, different from that of auricular flutter and fibrillation. This is indicated by the slowing and termination of attacks by vagal stimulation and by digitalis, by the acceleration of the rate by exercise, by the relatively slow rate and long cycle length and by the separation of the auricular deflections by isoelectric intervals.

No one of these features of auricular paroxysmal tachycardia is of itself decisive, but all together point strongly toward circus rhythm involving one of the nodes. This mechanism alone can account adequately for the abrupt onset and termination of the paroxysms, the stability of the rate, the form of the auricular deflections and their separation by isoelectric intervals, the relatively slow rate and long cycle length, the occasional alternation of cycle length, the rarity of atrioventricular block and the impossibility of producing it in most cases, the acceleration of the rate by exercise, and the slowing and termination of attacks by vagal stimulation, digitalis and quinidine.

DISCUSSION

DR. G. E. WAKERLIN, Chicago: From a physiologic standpoint the vagus is relatively insensitive to direct pressure. When one speaks of stimulation of the vagus by pressure in man one really means stimulation of the carotid sinus with reflex increase in the inhibitory effects of the vagus.

DR. PAUL S. BARKER, Ann Arbor, Mich.: I used the term "vagal stimulation" for brevity.

(To be continued)

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Hygiene, Baltimore

37:1-120 (Jan.) 1943

*Immunologic Reactions in Subclinical Trichinosis. S. E. Gould, Ann Arbor, Mich.—p. 1.
Experimental Attempts to Infect Man with Avian Malaria. S. B. McLendon, Columbia, S. C.—p. 19.
Histologic Adaptation of Virus of Fox Encephalitis. J. C. Barton, St. Helens, Ore., and R. G. Green, Minneapolis.—p. 21.
Family Studies in Eastern Health District: I. General Characteristics of Population. L. J. Reed, W. T. Fales and G. F. Badger, Baltimore.—p. 37.
Resistance Against Toxigenic Corynebacterium Diphtheriae in Rabbits Following Injections of Nontoxigenic Diphtheria Bacilli. M. Frobisher Jr., and Elizabeth I. Parsons, Baltimore.—p. 53.
Mouse Adapted Lansing Strain of Poliomyelitis Virus: I. Study of Neutralizing Antibodies in Acute and Convalescent Serum of Poliomyelitis Patients. T. B. Turner and L. E. Young, Baltimore.—p. 67.
Id.: II. Quantitative Study of Certain Factors Affecting Reliability of Neutralization Test. L. E. Young and Margaret Merrell, Baltimore.—p. 80.
Duration of Immunity Following Vaccination with 17D Strain of Yellow Fever Virus. J. P. Fox and A. S. Cabral, Rio de Janeiro, Brazil.—p. 93.

Immunologic Reactions in Subclinical Trichinosis.—To determine the value of the intradermal and precipitin tests and the eosinophilic leukocyte count in the diagnosis of subclinical or old unrecognized trichinosis, Gould performed them on 3,398 routine hospital patients, 103 inmates of a Jewish home and 1,231 consecutive necropsies. Among the 1,231 subjects who came to necropsy, 388 had been tested during life. The press method of examining 10 Gm. of diaphragmatic muscle taken from near the tendinous insertion is recommended as the single method which is likely to isolate the largest percentage of Trichinella spiralis in cases of old trichinosis as encountered at necropsy. The chance of exposure to infection with T. spiralis was directly related to age. In subclinical trichinosis the majority of infestations were mild. It is believed that reinfection does occur in man. Even in heavy infestations the clinical history cannot be relied on to reveal any symptoms attributable to the infection. There appeared to be a progressive diminution in cutaneous response to trichina antigens in older persons with subclinical trichinosis due either to the failure of cutaneous antibodies to develop or to their disappearance sometimes after trichinous infection. The cutaneous response to trichinous infection, on the average, was judged to persist less than ten years. In the aged Jewish patients the observations indicated a high degree of specificity of the antigens used. The intradermal tests with trichina antigens are of little value in the diagnosis of old subclinical trichinosis. Nonspecificity to trichina antigens may be due to sensitization from nonviable trichina material in ingested pork. The absence of immediate intradermal reactions in five heavy infestations is believed to constitute strong evidence against the permanent persistence of trichina antibodies in the skin. There was no evidence to support the contention that allergic patients tend to react to trichina antigens. The duration of reactivity is believed to be shorter than the life of the encysted larvae. With three antigens in high dilution the immediate intradermal test was more sensitive and easier to read than the delayed test. The precipitin reactions appeared to be related to recently acquired infections. There was no correlation between the occurrence of subclinical trichinosis and of eosinophilia; apparently eosinophilia was lost earlier than either the precipitin or the intradermal reaction. The occurrence of a well defined eosinophilia is not apt to be the result of an old subclinical or unrecognized trichina infection.

American Journal of Public Health, New York

33:1-112 (Jan.) 1943

Occupational Medicine and Hygiene: Its Role in Britain in Wartime. E. R. A. Merewether, Aberdeen, Scotland.—p. 1.
War and the Health Department: A. Across the Nation. C. P. Taft, Washington, D. C.—p. 15.
Id.: B. In a Western County. W. L. Halverson, Los Angeles.—p. 20.
Id.: C. In an Eastern City. A. L. Burgdorf, Hartford, Conn.—p. 26.
Basic Criteria for Qualified Leadership in Environmental Sanitation Program. F. J. Underwood, Jackson, Miss.—p. 31.
Responsibility of Local Health Authorities in War Emergency. J. W. Mountin, Washington, D. C.—p. 35.
Hypothetical Relationship of Water Supplies to Poliomyelitis. K. F. Maxcy, Baltimore.—p. 41.
Joint Responsibilities and Indirect Services of the Health Department in Environmental Sanitation. J. L. Barron, Mineola, N. Y.—p. 46.
*Tetanus Toxoid, Its Use in the United States Army. A. P. Long, Washington, D. C.—p. 53.
Surveys of the Nutrition of Populations: Description of Population, General Methods and Procedures and the Findings in Respect to Energy Principles (Calories) in a Rural Population in Middle Tennessee: Part II. J. B. Youmans, E. W. Patton and Ruth Kern, Nashville, Tenn.—p. 58.

Use of Tetanus Toxoid in the United States Army.—The present experience of the active immunization against tetanus of American troops is discussed by Long. The agent selected was fluid or plain tetanus toxoid. While no large scale studies for the determination of blood antitoxin levels have been made, the antitoxin content of the serums of several small groups has been determined and from this it seemed reasonable to assume that adequate protection based on active immunity is attained after the initial series of three injections of tetanus toxoid has been completed and that the use of prophylactic antitoxin is not necessary after this immunity has been established. The circulating antitoxin that results from active immunization is potentially more significant immunologically than is that of passive immunization. Serum specimens obtained from individuals just before and one week after a stimulating dose of toxoid given one year after the initial doses were found to contain 0.001 to 0.1 unit of antitoxin per cubic centimeter before the stimulating dose and usually more than 0.6 unit one week after the stimulating dose. These titers correspond closely with those obtained by others under more or less similar circumstances. Under ordinary conditions the incidence of tetanus in the army and in the civil population of this country is low. Since June 1941, when the present tetanus immunization program was adopted, only 4 cases have been reported from the entire army. None of these occurred in an immunized individual. No cases of tetanus have been reported from battle casualties. This may assume some significance when considered with the fact that other anaerobic infections have been reported and that in at least one of the combatant areas considerable potential danger from tetanus infection exists. It is believed that the present plan of tetanus immunization affords our fighting forces maximal protection.

Anesthesiology, New York

4:1-112 (Jan.) 1943

Trichlorethylene Anesthesia and Cardiac Rhythm. R. M. Waters, O. S. Orth and N. A. Gillespie, Madison, Wis.—p. 1.
Improved Intratracheal Technic. J. E. Grimm and R. T. Knight, Minneapolis.—p. 6.
Refrigeration Anesthesia for Limb Operations. F. M. Allen, New York.—p. 12.
Geriatrics and Anesthesia. J. W. Baird, Hartford, Conn.—p. 17.
Anesthetic Management for Drainage of Abscess of Submandibular Space (Ludwig's Angina). J. H. Bennett, Cincinnati.—p. 25.
Effect of Cyclopropane Anesthesia on Glucose and Epinephrine Levels of Blood. W. B. Youmans, C. P. Wangeman, H. E. Griswold Jr. and A. I. Karstens, Portland, Ore.—p. 31.
Fish Assay for Anesthetic Effect of Steroids. H. Selye, Montreal, Canada, and R. D. H. Heard, Halifax, N. S., Canada.—p. 36.
New Oxygen Therapy Apparatus: Preliminary Report. A. W. Bortin, Roslyn, N. Y.—p. 48.
Critical Analysis of Use of Intravenous Morphine. D. Presman and S. Schotz, Chicago.—p. 53.
Critic of Intravenous Anesthesia in War Surgery. F. J. Halford, Honolulu, Territory of Hawaii.—p. 67.
Intravenous Anesthesia with Pentothal Sodium in Case of Gunshot Wound Associated with Accompanying Severe Traumatic Shock and Loss of Blood: Report of Case. R. C. Adams and H. K. Gray, Rochester, Minn.—p. 70.

Bulletin of Los Angeles Neurological Society

7:157-214 (Dec.) 1942

Present Status of Experimental Neuroembryology: Reevaluation of Fundamental Principles of Development of Nervous System. C. B. Courville, Los Angeles.—p. 162.
*Syphilis of Central Nervous System: Comparative Study of Clinical and Pathologic Diagnoses in 145 Verified Cases. C. Marsh, Los Angeles.—p. 182.
Hemiplegia in Tuberculous Meningitis: Its Etiology and Incidence. C. W. Olsen and A. F. Brown, Los Angeles.—p. 189.
Hemiedema in Hemiplegia: Report of 3 Cases. A. P. Friedman, Los Angeles.—p. 194.
Albuminocytologic Dissociation in Spinal Fluid with Xanthochromia: Report of 2 Cases. K. O. von Hagen, Los Angeles.—p. 198.
Psychomotor Hyperkinesis Due to Anoxia. J. M. Nielsen and A. P. Friedman, Los Angeles.—p. 202.

Syphilis of Central Nervous System.—Marsh has tried to find some of the reasons for the frequent discrepancy between the clinical and pathologic diagnosis of 145 verified cases of neurosyphilis at the Los Angeles County Hospital. The 145 cases were collected from the protocols of 25,000 necropsies. The most common errors in diagnosis were due to (1) incomplete study of the patient because of sudden death soon after admission, (2) failure to recognize the minimal signs of chronic meningeal syphilis, (3) the tendency to call all cases of neurosyphilis syphilis of the central nervous system, "C. N. S. lues," with no effort at accurate classification and (4) inaccurate classification of well defined cases of neurosyphilis. A review of the serologic reactions of the group revealed that all but 1 patient with dementia paralytica had positive blood and spinal fluid Wassermann reactions; in this 1 the reaction was anticomplimentary. The colloidal benzoin reactions were typically paretic in each instance. Of the 37 patients who had tabes dorsalis and who had had serologic reactions performed, 14 had a negative blood Wasserman reaction and 7 a negative spinal fluid Wassermann reaction. Of the 22 who had had the colloidal benzoin test done only 8 had a typical tabetic curve. In 60 of the 80 with meningovascular syphilis a positive blood Wassermann reaction was recorded, while the spinal fluid Wassermann reaction of 43 was recorded as positive. The colloidal benzoin curve of only 22 was typically meningitic. The various types of neurosyphilis are proved pathologically to be fairly clearcut entities. The chief exception is chronic meningeal syphilis, which obviously may produce few changes easily overlooked. The diagnosis of combined types of neurosyphilis such as tabes with dementia paralytica usually proves to be erroneous. Its widespread symptoms are due to multiple vascular lesions or to a syphilitic entity plus some other disease, usually arteriosclerosis. The objective of a refined diagnosis is more worthy of scientific medicine and more productive of intelligent effort at therapy than the noncommittal and indefinite designation of "C. N. S. lues."

Delaware State Medical Journal, Wilmington

15:1-16 (Jan.) 1943

*First Aid in Chemical Warfare. R. C. Holcomb, Upper Darby, Pa.—p. 1.

First Aid in Chemical Warfare.—The twenty warring chemicals that the Medical Division of the Office of Civilian Defense considers are subdivided into seven classes: lung irritants, blister gases, tear gases, irritant smokes, incendiaries, screening smokes and systemic poisons. An ideal protective ointment against vesicants is known as Protective Ointment MIV by the Chemical Warfare Service, but it is not apt to be available for civilian use. Of the neutralizing agents bleach powder has been used successfully, but as it is not always available the ideal is to cleanse the skin thoroughly with soap and water. Bleaching solutions of sodium hypochlorite have been suggested when other preparations are not readily available in an emergency. For lewisite the neutralizing agent is an 8 per cent solution of hydrogen peroxide, but the U. S. P. 3 per cent solution may be used when the stronger and more preferable one is not available. Some of the solvents recommended are nonleaded gasolene, alcohol, kerosene and carbon tetrachloride (pyrene). The irritant must not be spread by an excess of the solvent. Of the detergents soap will mechanically remove vesicants from the skin. Holcomb also lists first aid treatment for the other agents.

Florida Medical Association Journal, Jacksonville

29:293-344 (Jan.) 1943

Safeguards in Cataract Surgery. F. E. Burch and E. P. Burch, St. Paul.—p. 307.
Management of Severe Craniocerebral Injuries, with Special Reference to Compound and Penetrating Wounds. J. G. Lyerly, Jacksonville.—p. 313.
Mechanism of Vertigo. M. A. Nickle, Clearwater.—p. 320.
Encephalitis Complicating Measles. H. A. Carithers Jr., Jacksonville.—p. 324.

Southern Medical Journal, Birmingham, Ala.

36:87-166 (Feb.) 1943

Penetrating Gunshot Wounds of Abdomen. F. L. Loria, New Orleans.—p. 87.
Treatment of Minor Injuries and Early Treatment of Major Injuries. R. A. Moore, Winston-Salem, N. C.—p. 94.
Effects on Hearing of Acoustic Trauma in Industry and War. S. L. Fox, Baltimore.—p. 97.
Medicine Looks at War. F. W. Rankin, Washington, D. C.—p. 101.
After the War, What Next? L. E. Sutton Jr., Richmond, Va.—p. 105.
*Incidence and Recognition of Riboflavin and Niacin Deficiency in Medical Diseases. Grace A. Goldsmith, New Orleans.—p. 108.
Preventive and Public Health Aspects of Rheumatic Fever in Children. Louise Fry Galvin, Richmond, Va.—p. 116.
Etiologic Factors Producing Asphyxia Neonatorum in Infants Delivered by Cesarean Section. A. Bloxsom, Houston, Texas.—p. 121.
*Intravenous Use of Digitalis Glycosides. J. S. LaDue, New Orleans.—p. 124.
Angiomatous Basal Cell Tumor. J. H. Lamb, Oklahoma City; C. F. Geschickter, Baltimore, and E. S. Lain, Oklahoma City.—p. 133.
Postpartum Sterilizations: Indications and Results. F. R. Lock, R. C. Forman and N. M. Webster, Winston-Salem, N. C.—p. 138.
Present Status of Gynecologic Organotherapy. E. Novak, Baltimore.—p. 145.
Recent Developments in Treatment of Poliomyelitis. R. L. Bennett, Warm Springs, Ga.—p. 152.
Nail Polish Eczema. F. A. Simon, Louisville, Ky.—p. 157.

Riboflavin and Niacin Deficiency.—To determine the frequency of vitamin deficiency in medical diseases, Goldsmith studied 200 patients admitted to the medical wards of Charity Hospital; there were 50 each of white and Negro males and females whose ages varied from 5 to 82 years. The clinical criteria for suspecting niacin and riboflavin deficiency were those suggested by the Subcommittee on Medical Nutrition, Division of the Medical Sciences, National Research Council. Forty per cent of the patients showed definite and 67 per cent probable evidence of deficiency of niacin and/or riboflavin. Changes in the tongue were the most common abnormal signs, while lesions of the skin, eyes and lips occurred in this order of frequency. Severe and characteristic manifestations were present more often in white than in Negro patients. Signs of deficiency were present in all persons with hyperthyroidism, cirrhosis of the liver and chronic alcoholism, and in two thirds or more of those who had infections, diabetes mellitus, carcinoma and diseases of the gastrointestinal tract. Inadequacy of riboflavin was the most frequent cause of deficiency disease. The high incidence of deficiency was not surprising, as most of the persons examined had been living on an inadequate diet for months or years, either because of poverty or because of poor food habits. With the onset of disease their insufficient intake of vitamins did not supply the minimal requirements. Many patients had evidence of deficiency of vitamin A and ascorbic acid, as well as of the vitamin B complex.

Intravenous Use of Digitalis Glycosides.—LaDue gave 83 patients (62 with auricular fibrillation and 21 with regular sinus rhythm) with heart failure consequent to valvular disease, hypertension or arteriosclerosis lanatoside C by vein, and 85 patients (40 with auricular fibrillation and 45 with regular sinus rhythm) took the drug orally. All the patients were given "digitalizing" and maintenance doses. There was no statistically significant difference in either group in the average rate of improvement as measured by a fall in venous pressure and circulation time, a rise in vital capacity and diuresis. Within two hours of an intravenous injection of 1.6 mg. of lanatoside C, 10 patients with congestive heart failure with regular sinus rhythm responded with a decrease in the diastolic heart volume and an increase in the stroke output, minute output and work of the heart; therefore the mechanical efficiency of their hearts was increased. Lanatoside C intravenously is recommended in uncomplicated, severe congestive heart failure. It is a safe and effective way to achieve rapid digitalization.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

55: 1-30 (Jan.) 1943

Cutaneous and Subcutaneous Nodules with Juxta-Articular Infiltrations and Rheumatoid Symptoms. F. P. Weber.—p. 1.
Treatment of Lichen Planus by Exposure of Spine to Large Doses of X-Rays. F. F. Hellier.—p. 11.
Dermatitis Venenata Caused by Smoke. J. V. Landor.—p. 17.

British Medical Journal, London

1: 61-90 (Jan. 16) 1943

Abdominal Wounds in War: Treatment of Individual Lesions. J. Walton.—p. 61.
Calory Control: New Dietetic Treatment of Diabetes Mellitus. A. C. Crooke and Ella Scott.—p. 64.
Action of Radiant Heat Cradles. G. M. Brown, D. S. Evans and K. Mendelssohn.—p. 66.
Syphilis Treated with Daily Multiple Injections of Mapharside. J. Kvittingen.—p. 69.
Three Comments on Prevention of Sterility. E. Schleyer.—p. 71.

1: 91-120 (Jan. 23) 1943

Generalized Vaccinia. A. A. Jubb.—p. 91.
*Prognosis in Civilian Head Injuries. E. Guttmann.—p. 94.
Eventration of Diaphragm: Case. A. J. E. Mills.—p. 97.
Significance of Pleurisy and Pleural Effusion in Differential Diagnosis. R. R. Trail.—p. 98.
Transuterine Insufflation and Salpingography. A. Leech-Wilkinson.—p. 100.
Pitressin Diagnosis of Idiopathic Epilepsy. W. Blyth.—p. 100.

Prognosis in Civilian Head Injuries.—In addition to the organic damage the prognosis of accidents depends on economic, social and psychologic factors which profoundly influence the patient's health, happiness and working capacity after an accident. Among 300 consecutive admissions of head injury there were 255 civilians available for study. The accidents were mainly road accidents of a mixed urban and rural area. Ten of the 255 patients died and 2 were permanently incapacitated as the result of cerebral damage. More than 80 per cent of patients were discharged from the hospital within two weeks of admission. All who stayed in the hospital four weeks or longer did so because of fractures. The average working time lost by wage earners was eight weeks. In those with a post-traumatic amnesia of one hour or less the average working time lost was four to five weeks; in those with post-traumatic amnesia of one to twenty-four hours it was five to six weeks; in those with post-traumatic amnesia of one to seven days about nine weeks and in the severest cases it was fourteen weeks. Eight patients were off from work for twenty-six weeks, 2 because of cerebral damage. With the exception of those with cerebral damage, it could be shown that patients who stayed away from work for an unusually long time did so for social and psychologic reasons rather than because of the physical effect of the accident. The results emphasize the need for prophylactic management and after-care until the patient has returned to full time work.

Journal of Royal Naval Medical Service, London

28: 309-408 (Oct.) 1942

Vapors and Dyspeptic Feelings. R. W. Mussen.—p. 309.
*Crush or Compression of Limbs with Impairment of Renal Function. J. A. Shepherd.—p. 314.
More Recent Additions to Our Knowledge of Effects of Compression and Decompression on Man and Application of This Knowledge to Practical Problems Connected with High Flying and Deep Diving. S. G. Rainsford.—p. 326.
Gynecomastia or Male Mammary Hypertrophy. W. G. Gill.—p. 333.
Investigation of 78 Cases of Scabies. G. Ollerenshaw.—p. 342.
Detention from Medical Aspect. R. R. Prewer.—p. 346.
Management and Treatment of Early Syphilis in His Majesty's Ships. S. J. Wheeler.—p. 351.
Notes on Treatment of Bacillary Dysentery. D. C. Wilson.—p. 357.
Abnormal Mental States in Survivors, with Special Reference to Collective Hallucinations. E. W. Anderson.—p. 361.

Crush or Compression of Limbs and Renal Impairment.—A classification depending on the history and the relevant detail of crush injury or compression is adopted by Shepherd, who divides such injuries into three types: (1) compression of a limb or limbs in a homogeneous manner by loose rubble or other débris, (2) pinning of a part or parts of a limb or limbs by localized pressure and (3) mixed compression by rubble, masonry and girders involving various parts of the body. Recognition of the mode of injury will give some guide to a rational therapy. "Compression syndrome" rather than "crush syndrome" should be reserved for cases in which typical local lesions and secondary renal effects develop. The first type of damage, with immediate or prolonged effects, is due to prolonged ischemia of the limb. Elevation of the limb after bandaging and then gradual release of the supporting bandage should result in a gradual return of circulation. Surgical intervention (amputation) is not necessary unless definite and extreme tenseness of muscle compartments exists when multiple tension relieving incisions are indicated. It is doubtful whether peripheral edema can be reduced by concentrated serum given intravenously. Inhalation of oxygen is worth trying in the early stages; it may help to counteract the local anoxemic effects. The local treatment of group 2 cases is the same, except that when acute ischemia is not explained by the tension of edema the main artery should be explored and freed. Arterial spasm from local injury is likely to be a feature. In group 1 and 2 cases the danger of renal injury is proportionate to the local injury, dehydration and prolonged low blood pressure. The two latter factors must be corrected. If the circulation is impaired seriously the transfusion of plasma and oxygen therapy must be intensive. Plasma should be reserved for patients with true hemoconcentration and diminished blood volume: it may harm other patients. With renal impairment or after plasma transfusion excretion is best assured by the slow infusion of isotonic sodium sulfate. The effect of toxins may be diminished by rapid and adequate renal secretion. Drastic diuresis is to be avoided. Blood transfusion is contraindicated. In the third group specific local treatment is a secondary consideration, as the lesions are numerous and varied. Gross dehydration and its associated acidosis require immediate attention. With these patients extreme starvation and physical exhaustion have been added to the effects of trauma. The fact that they have reached the hospital alive suggests that the organism has adapted itself, at least temporarily, to a low and disordered metabolism and normality can be reached only gradually. Overheating must be avoided and fluid loss must be made up slowly, if possible by mouth or by rectal or intravenous therapy. Protein intravenously is to be avoided; alternate dextrose saline and sodium sulfate is preferable. The chief cause of renal failure in these patients is acidosis, and its gradual correction will control the associated uremia. The danger of pulmonary edema because of prolonged intravenous therapy when a blast lesion of the lungs is present must be risked; oxygen therapy may help to control such effects. Convalescence is protracted.

Medical Journal of Australia, Sydney

1: 23-44 (Jan. 9) 1943

Lymphogranuloma Inguinale: Historical Review and Pathologic Aspects. H. F. Bettinger.—p. 23.
Clinical Aspects of Lymphogranuloma Inguinale. F. M. McDonald.—p. 25.
Laboratory Findings in Lymphogranuloma Inguinale. H. H. Johnson Jr., with comment by F. M. Burnet.—p. 28.
Pyoderma Ulcerosum Tropicalum. O. Alpins.—p. 30.

Practitioner, London

150: 65-128 (Feb.) 1943

Modern Views on Early Diagnosis and Treatment of Pulmonary Tuberculosis. G. S. Todd.—p. 65.
Massive Collapse of Lung. G. Marshall and A. F. Foster-Carter.—p. 71.
Early Diagnosis of New Growths of Lung. W. D. W. Brooks.—p. 75.
Scope of Modern Chest Surgery. O. S. Tubbs.—p. 82.
Diagnosis and Treatment of Acute Infection of Lower Respiratory Tract in Children. D. Hubble.—p. 89.
Genitourinary Problems in the Care of the Soldier in Training. E. W. Riches.—p. 95.
Psoriasis. E. Pulay.—p. 105.
Psychology in General Practice: II. Classification and Methods of Case Taking. A. S. Paterson.—p. 112.

Annales Paediatrici, Basel

158:177-232, 1942

Glycogenosis (Syndrome of von Gierke). J. Mury.—p. 177.
Rat Bite Fever: Case in Girl Aged 2. N. Facatselli.—p. 216.
Antidiphtheric Vaccination. D. Oltramare.—p. 223.
*Suggestion for Treatment of Allergic Conditions. J. Surányi.—p. 231.

Suggestion for Treatment of Allergic Conditions.—Surányi points out that the oral administration of nicotinic acid amide produces in some cases erythema of extensive areas, a feeling of heat and itching; that is, symptoms similar to those elicited by the parenteral administration of histamine. The toxin involved in allergic reactions has sometimes been identified as a histamine-like substance and on this basis therapeutic methods have been suggested which involve histamine and decomposition of histamine. The similarity between histamine action and the effect of nicotinic acid suggested to the author the possibility of using nicotinic acid in children with allergic disorders. He gave a number of allergic children three weeks of treatment, giving twice daily, between meals, 0.025 or 0.05 Gm. of nicotinic acid, depending on the age. The treatment was instituted only in those cases in which an oral nicotinic acid test resulted in erythema. Urticaria, asthma and spastic bronchitis were found to respond favorably; exudative eczema was influenced slightly less.

Schweizerische medizinische Wochenschrift, Basel

72:933-956 (Aug. 29) 1942. **Partial Index**

*New Method for Reinfusion of Blood in Abdominal Cavity: Technic of Suctioning Off of Fluids from Body Cavities. E. Anderes and M. Laszczower.—p. 933.
Experimental Contribution to Treatment of Carbon Monoxide Intoxication. A. Thurnherr.—p. 938.
Gastrogenic Polyneuritis and Tetany. Helene Roesli.—p. 944.
New Apparatus for Suction Drainage of Pulmonary Cavities. H. Alexander.—p. 945.
New Pneumometer for Determination of Expiration Force (Maximal Force of Expiration). W. Hadorn.—p. 946.

Reinfusion of Blood in Abdominal Cavity.—Anderes and Laszczower developed a method of reinfusing blood in the abdominal cavity which does not interfere with the surgeon's chief task; that is, rapid hemostasis by clamping of the tube. The blood is withdrawn from the abdomen by means of a suction pump, and by means of a specially constructed filter it is drawn directly into the transfusion tube. In this way not only is handling and air contact avoided but the danger of secondary infection is reduced. After illustrating and describing the apparatus and its use, the authors say that so far they have used it in 15 cases. The results were always favorable. The advantages of reinfusion having been stressed by other investigators, the authors do not repeat them. In the cases in which reinfusion is not possible on account of excessive coagulation, inflammation of the abdominal organs or overaged blood (hematocele) the authors prefer the transfusion of donor blood.

Schweiz. Ztschr. f. Path. u. Bakteriol, Basel

5:1-136, 1942. **Partial Index**

*Investigations on Tissue Reaction to Thorotrast if This Substance is Used for Diagnostic Purposes in Human Subjects. F. Wohlwill.—p. 21.
Malherbe's Epithelioma. W. F. Muehlon.—p. 53.
Cavernous Hemangioma of Ovary. H. Ackermann.—p. 79.
Organ Specificity of Renal Extracts. P. Kallós.—p. 119.

Tissue Reactions to Thorotrast.—Wohlwill examined 38 human cadavers, 8 extirpated cerebral tumors and 3 other excisions for the effects of the diagnostic injection of thorotrast. The description of his observations is illustrated with photomicrographs. The direct effect of undiluted thorotrast solution for instance in mammography and ventriculography is local retention accompanied by necrosis and various inflammatory reactions. Following intra-arterial injection thorotrast first accumulates within the capillary lumens, then it migrates through the walls and finally it is deposited in the perivascular tissues. In the reticuloendothelial system thorotrast is first diffusely stored, particularly in Kupffer's star shaped cells; later it is taken up by the symplasmatic cell group situated in the portobiliary centers of the liver. Thorotrast is stored by the tumor cells of meningiomas and neurinomas. The histologic reactions are largely dependent on the amount and the concentration of the injected thorotrast.

Revista Clínica Española, Madrid

6:281-360 (Sept. 15) 1942. **Partial Index**

Exanthematic Typhus. E. Gallardo and J. Sanz Ibañez—p. 281.
*General Denutrition ("Hunger Edema"). C. Jiménez Díaz, L. Lorente, C. Marina, E. Ortiz de Landázuri and E. Roda.—p. 289.
Epilepsy with Frontal Focus with Rare Symptoms. V. Gilsanz García.—p. 309.
Thrombopenic Purpura Due to Ingestion of "Sedormit." J. Peláez Redondo.—p. 324.

"Hunger Edema."—Jiménez Díaz and his collaborators observed several cases of general denutrition with edema and diarrhea, the so-called hunger edema which occurred during the Spanish war and immediately afterward. The disease was due to dietary deficiency in all cases. The authors review the clinical symptoms and the course of the disease which develops in three periods. The main symptoms are progressive asthenia, anemia, progressive emaciation, increased thirst, polyuria, frequent fainting, diminished body temperature, bradycardia, arterial hypotension, edema, diarrhea, atrophy of the skin, paresthesia in the limbs and pigmentation of the hands, legs and face. The velocity of sedimentation of the erythrocytes is high and the figures of total proteins in the plasma are diminished. The symptoms are mild during the first period of the disease. The appetite for food is moderate. Edema and diarrhea appear in the second period, which begins with acute attacks of fever, diarrhea and edema either simultaneously or in succession. Edema begins suddenly in the lower limbs. Later on it appears in the face, the hands, the arms, the abdomen and the thorax. Sometimes it grows to true anasarca. Diarrhea is abundant and liquid. In rare cases there are discharges of mucus and blood and it is associated with colic pain. Symptoms of the disease, especially asthenia and emaciation, become acute. Lack of appetite, dryness and inflammation of the buccal and pharyngeal mucosas and, later on, glossitis, pharyngitis and ulcerous stomatitis appear. The "black tongue" is observed in some cases. During this period the subcutaneous tissue disappears and the muscular tissue diminishes in more than 40 per cent of its volume. The skin wrinkles, parasitic diseases, especially scabies, are frequent and folliculitis, multiple cold abscesses, chronic ulcers, pilar keratosis and impetigo appear. The patients have a tendency to develop acute diseases from latent ones, such as for instance acute pulmonary tuberculosis. Diseases of the respiratory tract and local and general infections are followed by acute complications. The third and last period of the disease is complicated by intractable vomiting, tympanites, somnolence and final peripheral collapse, coma or acute convulsions. The treatment consists of rest in bed and progressive feeding with diets in which the number of calories and the amount of proteins (milk, cheese, eggs and meat) are gradually and slowly increased. Patients in the first period of the disease rapidly improve, but the recurrences are frequent unless the disease is controlled by administration of a proper diet during more than three months. Patients in the second period show sudden disappearance of edema when they are put to bed. The general symptoms improve in some cases very slowly. The diet should be carefully controlled and administered for as long as polyuria and rapid sedimentation of the erythrocytes persist. Blood transfusion or plasma injections are indicated in cases of acute edema and when the figures of proteinemia are very low. A large number of patients who are observed in the second period of the disease and all those who are seen in the last period die. Death may be due to aggravation of a latent disease (pulmonary tuberculosis), an intercurrent disease, acute complications of the cutaneous, buccal and pharyngeal diseases or general cachexia. In the last event it may occur with sudden collapse or else with either acute edema of the lung or violent convulsion in rare cases, and with coma and slow peripheral collapse in the majority of the cases. General denutrition of the muscular tissues and moderate diminution of the size and weight of the viscera are the only findings during necropsies on cadavers of patients who died from "hunger edema" without complications. The diminution of the size and weight of the viscera, in order of frequency, is as follows: kidneys, liver, pancreas, spleen and heart. The heart has the aspect of the heart in brown atrophy. The other viscera are pale but otherwise normal.

Book Notices

Renal Lithiasis. By Charles C. Higgins, M.D., Cleveland Clinic, Cleveland, Ohio. Fabrikold. Price, $3. Pp. 140, with 18 illustrations. Springfield, Illinois & Baltimore: Charles C Thomas, 1943.

In this volume the author presents the results of ten years' study of the etiology and treatment of renal lithiasis. Seventy of the one hundred and twenty pages are devoted to etiology. The relationship between the formation of stone and the absence of certain essentials in the diet has been noted by many observers and is duly considered. The results of the author's experiments in the production and cure of stones are presented in great detail, so that any one interested has immediate access to this information without extensive search through the literature. Although most of the text is devoted to this phase of the subject, other factors in the etiology, including the subject of renal calculi due to sulfapyridine, are also given. Symptoms and diagnosis are well presented. The author stresses the importance of careful and complete preoperative study by roentgen ray, pyelography, functional tests and bacteriologic examinations of the urine. The surgical treatment is brief, to the point and well illustrated. As one might expect in a book of this type, a detailed presentation of the dietetic treatment is given. Sixteen pages are devoted to diets, so that those interested in prescribing a suitable diet can do so with great ease. Unfortunately, one misses a chapter on pathologic changes due to renal stone. In his preface the author states "I hope to have prepared this little volume in such a way as to make it a quickly and easily accessible reference work for both the student and the established urological surgeon." In this he has succeeded.

The Kenny Treatment for Infantile Paralysis: An Orthopaedic Report and Comparison of Results on Forty-Eight Cases Treated by This Method. By Robert Bingham, M.D., Captain, Medical Corps, Army of the United States. Boards. Pp. 50 Camp Van Dorn, Mississippi: The Author, [n. d.].

An orthopedist's attempt to evaluate the Kenny treatment of infantile paralysis from a study of practical and measurable end results forms the basis for a study of 60 cases of the disease. These have been divided for the purpose of comparison into three groups, those having received only the conventional or orthodox treatment, those receiving a period of orthodox treatment superseded by Kenny treatment and those receiving Kenny treatment from the outset of therapy. The study was based on the symptoms described by Miss Kenny, viz. muscular spasm, alienation and incoordination, rather than purely on muscle paralysis as in the past. The results indicate that treatment of these conditions will reduce the disability from the disease. The study brings out that the patients treated with the Kenny technic prove to have less residual paralysis and better functional use of retained muscles, show fewer deformities, and required fewer braces and surgical procedures than those treated by the orthodox methods or than those treated by the orthodox plus the Kenny method. Control cases of infantile paralysis are difficult because of the wide variation in the involvement of individuals afflicted. Estimation of the value of a clinical procedure can for the present be based only on impressions gained by those accustomed to dealing with the after-effects of this disease. Dr. Bingham's study represents a sincere attempt to evaluate the Kenny methods.

Victory Over Fear. By John Dollard. Cloth. Price, $2. Pp. 213. New York: Reynal & Hitchcock, 1942.

"Some people hit upon the art of conquering fear early in life. Others never learn." Perhaps it is strange that man should have begun to learn about fear only in the past two generations. Yet every physician knows that anxiety, apprehension and restlessness are characteristics which frequently make or break the entire lives of many a man and woman. Dr. Dollard, who is a member of the staff of the Institute of Human Relations of Yale University, classifies seven deadly fears as basic; these are the fears of failure, sex, self defense, trusting others, thinking, speaking and being alone. One need not necessarily be equally afraid of all these at one time or perhaps of any one of them all the time; yet there is probably no human being who has not at one time or another had one of these fears in some proportion. For any one with ordinary intelligence, victory over fear will be aided by a careful study of this book. It is full of important practical advice based on studies of actual cases, which are related in interesting form. The book is dependent on the freudian approach but does not have the freudian atmosphere. Especially interesting is the chapter on security, a subject already discussed by many other psychologists and also by the psychiatrists. While it is true that feelings of inferiority and anxiety are more or less the opposite of feelings of security, there is something to be said for the importance of the fear of insecurity as an incentive. "Every one is more afraid today than he was a year ago." Yet the fear of death has always been with us, and we can consider that fear today in the light of the great advances of medical science which make less threatening the possibility and more comfortable the approach. "The long shadow of social change is falling on our society. Many people fear this change." Social changes are inevitable. Yet incentive has always depended on finding a reward for great striving. The fear of change inhibits progress. Most important is intelligent analysis of the need for change and correct guidance so that the trend may not destroy values which should be conserved.

Regional Analgesia for Intra-Abdominal Surgery With Special Reference to Amethocaine Hydrochloride. By Norman R. James, L.R.C.P. & S., D.A. Cloth. Price, 6s. Pp. 57, with 27 illustrations. London: J. & A. Churchill, Ltd., 1943.

This monograph describes lucidly and in detail the author's technic of "analgesia" for upper abdominal operations for patients who are seriously ill. The method is reminiscent of that published by Bartlett (R. W.: Bilateral Intercostal Nerve Block for Upper Abdominal Surgery, *Surg., Gynec. & Obst.* **71**:194 [Aug.] 1940), although several modifications are utilized. In the lateral position the sixth to twelfth intercostal nerves are blocked on each side by an injection of 1:1,000 concentration of pontocaine below the rib at a point 4 fingerbreadths from the vertebral spines. Then a posterior splanchnic block with 1:2,000 concentration of pontocaine is performed with the patient in the same position. The author recommends the use of carefully individualized doses of opiates given intravenously. Doses of omnopon varying from ⅓ to 1⅔ grains (0.02 to 0.10 Gm.) or morphine ⅙ to ¾ grain (0.01 to 0.05 Gm.) are suggested. One may question whether the method described creates a lesser hazard than the methods which it is designed to supplant in "poor risk" patients; namely, profound inhalation or "high" spinal anesthesia. Several authors have deplored the confusion in nomenclature arising from taking over foreign patents. The local agent described in this book is marketed in the United States as pontocaine. It was introduced in Germany as pantocain, later marketed in other countries as decicain, tetracaine and butethanol, and is referred to by James as amethocaine hydrochloride, which is now available to him from a British manufacturer as anethaine.

Diseases of the Skin. By Oliver S. Ormsby, M.D., Rush Professor of Dermatology, University of Illinois, Chicago, and Hamilton Montgomery, M.D., M.S., Associate Professor of Dermatology and Syphilology, Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota, Rochester. Sixth edition. Cloth. Price, $14. Pp. 1,360, with 660 illustrations. Philadelphia: Lea & Febiger, 1943.

This is actually the latest descendant of the original Montgomery and Hyde textbook of diseases of the skin. This volume apparently completes a cycle, since a descendant of the original Montgomery is now the associate author. The book is reliable and authoritative. Its form has tended to become a model for works of a similar character.

The introductory section constitutes a manual of something over a hundred pages, giving a general discussion of the anatomy and physiology of the skin and the general symptomatology, etiology, pathology, diagnosis, prognosis and therapy of skin diseases. Then come the sections covering skin diseases in various classifications, such as the hyperemias, hemorrhages, hypertrophies, atrophies, pigmentary disturbances, metabolic disorders, tumors, specific inflammations, neuroses, parasitic diseases and conditions affecting the sweat glands, the hair, the nails and the mucous membranes. A study of the table of con-

tents will indicate to the average physician how vastly intricate and complicated has become this specialty of medical practice.

The new discoveries in the field of general medicine have, of course, special application in dermatology. Thus the therapy of skin diseases has been especially modified by the introduction of the sulfonamide drugs, roentgen therapy and other forms of phototherapy and the use of refrigeration. The classic consideration of each disease involves its description, etiology, diagnosis, pathology and treatment. A special characteristic of the book is the quality of the illustrations, which are printed on a special stock. The photomicrographs represent about the best that can be found. An elaborate index makes the book especially useful.

Help Your Doctor to Help You When You Have Constipation. Walter C. Alvarez, Editor-in-Chief. Cloth. Price, 95 cents. Pp. 59. New York & London: Harper & Brothers, 1942.

Help Your Doctor to Help You When You Have Insomnia. Walter C. Alvarez, Editor-in-Chief. Cloth. Price, 95 cents. Pp. 29. New York & London: Harper & Brothers, 1942.

Help Your Doctor to Help You When You Have Heart Disease. Walter C. Alvarez, Editor-in-Chief. Cloth. Price, 95 cents. Pp. 47. New York & London: Harper & Brothers, 1942.

Help Your Doctor to Help You When You Have High Blood Pressure. Walter C. Alvarez, Editor-in-Chief. Cloth. Price, 95 cents. Pp. 25. New York & London: Harper & Brothers, 1942.

These four small books are part of a series which have been written to answer questions which may come into the mind of persons suffering from various ailments. The editorial board has stressed constantly, in preparing this series, their purpose to help the patient carry out the physician's instructions intelligently. Much of the information may lead to self medication, particularly as far as constipation is concerned. The material on laxatives, especially, may lead to the abuse of these substances. It would not appear that the discussion of high blood pressure, particularly essential hypertension, would be conducive to the patient's peace of mind. The presentation of "Ways in Which High Blood Pressure Does Harm" and "The Prognosis or Outlook for the Future" might well lead to mental turmoil. The material on heart disease is well prepared and should be of material benefit to those who suffer from cardiac damage. The book on insomnia also contains sound advice and may result in an occasional improvement of the person afflicted with this symptom. Here again, however, the discussion of drugs may lead to harmful self medication.

Life with Baby: A Manual in Photographs. By Elizabeth Godwin, Graduate Nurse of St. Christopher's College, Tunbridge Wells, England. With a foreword by J. Taylor Howell, M.D., Associate Attending, Babies Hospital, New York City. Photography by Lawrence Madison. Directed and Compiled by Milton Fox Martin. Cloth. Price, $2. Pp. 94, with illustrations. New York: Duell, Sloan and Pearce, 1942.

The photographs in this book portray various stages in bathing, dressing, feeding and sleeping a new baby. They are nice photographs, but only the one showing how to lift a baby out of a bathinette is of real value. The text accompanying the pictures is reliable as far as it goes. Untrained observers and people who need illustrations for guidance also need definite, minute instruction. Some of the major omissions follow. In the section on bathing the baby, details of how to wash the face—not just the nose and ears—should be given. Unless mothers are told specifically to dry between the fingers and toes, they usually omit it for fear of hurting the tiny infant. Feeding is usually the mother's biggest worry. The section on feeding can only add to her confusion. A special sterilizer is the one method shown and mentioned for sterilizing bottles and nipples. Miss Godwin, a native of England, should know that sterilizers are not only difficult to obtain but are dispensable in wartime. The picture itself is not enough to show how to pack a sterilizer. Diagram and legend are called for. The directions for dressing the baby and for bottle feeding are good. However, month old babies require cod liver oil and orange juice. No mention is made of these important foods or how to administer anything by spoon. The bed making photographs are useless without diagrams and legends to illustrate exactly how to tuck in sheets. In short, a more descriptive text and diagrams to complete the pictures would turn this into a useful book.

History of the Reading Hospital, 1867-1942. Published by the Board of Managers on Occasion of the 75th anniversary of the Reading Hospital, December 9, 1942. Cloth. Pp. 287, with 10 illustrations. Reading, Pa., 1942.

This book was prepared in celebration of the seventy-fifth anniversary of the Reading Hospital. About 1850 a few rugged and public spirited general practitioners organized the Reading Medical Association and some of them in 1867 founded the Reading Dispensary, which was the forerunner of the Reading Hospital. Among the founders was the president of the Berks County Medical Society at that time, who with another physician, when necessary, personally paid the rent for the dispensary building. The founders of the dispensary saw the need for the services of other distinguished professional and business men of the community, and that, it appears, was a large factor in the successful development of a hospital which on Sept. 1, 1942 had 361 beds in modern, well equipped buildings. While numerous citizens of the community gave funds toward rebuilding the hospital, the land and $600,000 were donated by Ferdinand Thun, Henry Janssen and Gustav Oberlaender. The persistent efforts and unselfish devotion of numerous citizens throughout the years justify the pride of those who are now privileged to carry on. The development of the profession of medicine itself in seventy-five years is illustrated in the chapter which shows chronologically the growth of the hospital. The basal metabolism department was founded in 1921, the department of anesthesia in 1922, the bronchoscopy department in 1926, the dermatology department in 1923, the diabetes department in 1934, the electrocardiograph department in 1925, the gastroenterology department in 1936, the orthopedic department in 1927 and the physical therapy department in 1924. A chapter is devoted to the Ladies Auxiliary of the hospital, which has a membership of about 2,500. There are numerous brief biographic sketches of deceased physicians and board members who have served the institution since 1867, as well as of those who are now carrying on.

Outline of Psychiatric Case-Study: A Practical Handbook. By Paul William Preu, M.D., Assistant Professor of Psychiatry and Mental Hygiene in the Yale University School of Medicine, New Haven. With foreword by Eugen Kahn, M.D. Second edition. Cloth. Price, $2.75. Pp. 279. New York & London: Paul B. Hoeber, Inc., 1943.

This book attempts to cover succinctly and competently all the technics which are used in giving a psychiatric evaluation. The first edition proved useful and satisfactory. The new edition is much improved and extended. Not only is the usual routine of psychiatric interrogation covered, but there is an extensive guide for history taking of both the problem child and the adult psychiatric case. In addition to the regular psychiatric examination of the adult there is an outline of the examination to be used with a child, and also the methods invoked when a patient is stuporous or comatose. The book should be valuable to the student who has to learn the technic of psychiatric examination, particularly if the methods outlined by Preu are those which are used with his own teacher, and there are individual differences in method. The book too should be used in combination with a good psychiatric textbook; for, while the questions, methods and directions of psychiatric investigation are outlined, the expected findings in individual differences are not.

Management of the Sick Infant and Child. By Langley Porter, B.S., M.D., M.R.C.S., and William E. Carter, M.D., Director of University of California Hospital Out-Patient Department, San Francisco. Sixth edition. Cloth. Price, $11.50. Pp. 977, with 96 illustrations. St. Louis: C. V. Mosby Company, 1942.

Alterations in the approaches to the management of sick infants and children make frequent revisions of pediatric textbooks necessary. In preparing the sixth edition of this book, additional material has been included throughout; an attempt has been made to describe practical technical procedures as well as clinical descriptions which the physician will find useful in ordinary daily practice. The section on methods will be found particularly valuable, and there is also much excellent material included in the section on formulas, recipes and drugs. The remainder of the book follows the usual pattern. It should be found of aid to the physician in general practice as well as to the specialist in childhood diseases.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TREATMENT OF PILONIDAL CYST

To the Editor:—**Will you please give me the current surgical technic in removing a pilonidal cyst. I should like to know whether to allow it to heal by granulation or to obtain primary union by sewing it up. It also interests me to know how soon after operation, using either of these two technics, the patient can be considered fit to enter the Army and undertake the thirteen weeks basic training required.** M.D., New York.

ANSWER.—If there is acute inflammation, warm, moist dressings should be applied until the inflammation has subsided. If there is an abscess it should be drained and treated with warm, moist dressings until all infection is removed. After there is little or no drainage, one should excise the lesion *en bloc*, going sufficiently wide so that the lining of the cyst is not seen at any time. All bleeding spots should be carefully tied. If there has not been drainage for some time it is permissible to reapproximate the edges of the wound after sprinkling 1 Gm. of sulfanilamide in the depth of the wound. If there has been much inflammation, it is better not to close the wound tightly. The skin edges can be sewn to the bottom of the wound with interrupted catgut stitches so that ⅛ to ¼ inch remains between these skin edges. This is lightly packed with iodoform gauze after one has placed sulfanilamide powder in the depth of the wound.

With a primary closure if no infection results, it should be possible for the patient to enter the Army four weeks after operation. With a closure by granulation it will probably take somewhere between five and ten weeks for a patient to be ready to resume hard physical work. In both instances after the patient has left the hospital the wounds should be kept meticulously clean, the hair shaved off, and frequently healing is aided by the application of 0.5 to 1 Gm. of sulfanilamide powder to the wound twice a day. This tends to prevent secondary infection.

REGURGITATION OF CLEAR FLUID

To the Editor:—**A man aged 53 had a subtotal resection for a bleeding duodenal ulcer of about seven years' standing. The operation was done in April 1942. He required fourteen blood transfusions. Slight hiccup appeared while he was in the hospital. Since his discharge on October 21 his hiccups have become more intense and appear as soon as he eats, and he either vomits or regurgitates about a pint of clear watery fluid. His nose also begins to discharge a watery fluid. On standing, about an inch of mucus sediments to the bottom of the container. Naturally there has been considerable loss of weight. I saw this man today for the first time. There was nothing that I could find in my reference library specifically discussing this problem. He refuses a barium study to determine whether obstruction or marginal ulcers are present. Can this be purely psychic, since soft food in small quantities (twenty-four hours after sedative medication) is now being mostly retained?** Morris Weintrob, M.D., Brooklyn.

ANSWER.—The patient probably has gastric dilatation of the residual portion of the stomach. The hiccup may be due to the irritation of the left diaphragm, caused either by the dilatation of the stomach or perigastritis which may have resulted from peritonitis following the operative procedure. The regurgitation of a clear fluid suggests either that there may be edema of the stoma or an insufficiently large stoma to take care of the stomach contents. The former is more likely, because of the large amount of chlorides that the patient would lose from the continuous vomiting. This hypochloremia would produce changes in the colloidosmotic pressure of the blood leading to the development of edema. Following this line of reasoning, it may be possible that the hypochloremia may be causing the azotemia, and the patient could hiccup from this azotemic state. The weight loss is associated with inanition, and the patient may be given intravenous sodium chloride and dextrose solution to bring his chloride balance to a near normal; this should be checked by suitable laboratory procedure. The patient should be given 1 cc. of diluted hydrochloric acid half an hour after meals six times a day for about one week and then maintained for some time on the same dose three times a day. The diet should be the same at the outset as the diet for ulcer in an ambulatory patient.

CEREBRAL VASCULAR OCCLUSION AND INJECTION OF VARICOSE VEINS

To the Editor:—**A patient with varicose veins in his leg had them injected and in thirty minutes after the injection he suddenly became disoriented and paralyzed on the left side in the arm and leg. For about a week he was mentally foggy and he still is paralyzed completely. He now states that for six months prior to this paralysis he had felt some numbness on the left side even to his tongue and that his gait was unsteady the last two or three weeks. I have examined him for syphilis and tuberculosis and had an x-ray examination of the skull for brain tumor, all with negative results. He presents no other symptoms now suggestive of a brain tumor. Did the injection of the varicose veins in the leg produce the paralysis?** M.D., Texas.

ANSWER.—The patient's age and general cardiovascular status are not known. If he is past middle age and shows other signs of arteriosclerosis, especially in the retinal vessels, one may assume that he suffered a cerebral vascular accident. Premonitory attacks of short duration, as described by the correspondent, are not infrequent and may be due to vasospasm or more probably to small thrombi in the cerebral vessels. The injection of a varicose vein may have brought on the cerebral vascular accident but is not any more apt to do so than the anxiety of the patient to get to the office on time, the pain caused by the injection or an unrelated exciting factor occurring after the injection and perhaps not even recognized by the patient. Generally speaking, patients who have had previous vascular occlusions anywhere in the body may develop subsequent occlusions with or without any obvious exciting cause during the course of daily activities and more data would have to be available regarding pulse rate, blood pressure, fainting or dizziness immediately after the injection for a definite connection to be established. Either a sudden fall or a sudden rise in blood pressure may adversely affect a previously injured cerebral vascular tree.

POSSIBILITY OF PREGNANCY WITH OVARY AND OVIDUCT ON OPPOSITE SIDES

To the Editor:—**Two years ago a woman aged 30 had the right oviduct and the left ovary removed. The surgical diagnosis was bilateral chronic salpingitis and "cystic" ovaries. The surgeon writes that both tubes were not removed because the patient desired to have more children. She had a normal pregnancy and delivery five years ago. The present pelvic examination shows no abnormality. The menses are normal. The patient desires to remarry and she wants to know what the chances are of becoming pregnant. I am considering injecting lipiodol and using x-ray to determine the patency of the remaining tube. If the roentgenograms show a patent tube, what are the chances of the patient becoming pregnant on the basis of having only one tube and one ovary on opposite sides? Would any reconstructive surgery increase the likelihood of the pregnancy?** M.D., Idaho.

ANSWER.—Women with one tube and one ovary, each on a different side, can become pregnant through external migration of the ovum. Both external and internal migration of ova can occur in human beings as well as in animals. The correct procedure in a case like this is to perform a Rubin test or inject iodized oil into the uterus and remaining tube. If either of these tests reveals that the tube is patent, nothing further should be done because pregnancy is possible. If, however, the remaining tube is closed to both gas and oil repeated Rubin tests should be done in the hope that the tube will open. However, such an occurrence following a surgical operation is not great. A plastic operation on the single tube should not be undertaken lightly. The results do not justify the risk of operation and the strong likelihood of tubal pregnancy. However, if a couple is willing to have a plastic operation after the risks have been explained, it may be attempted.

CULTURING TISSUE FLUIDS OF PATIENTS TAKING SULFONAMIDES

To the Editor:—**What bacteriologic methods are most practical in culturing material taken from a patient who is receiving one of the sulfonamide drugs? I believe the concentration in the urine after oral administration or in pleural fluid after intrapleural use is bacteriostatic.**
Emil Rothstein, M.D., Rockville, Ind.

ANSWER.—Para-aminobenzoic acid has been found to counteract the bacteriostatic effect of the sulfonamides. When fluids from patients under treatment with sulfonamides are cultured it is necessary to add para-aminobenzoic acid to the culture mediums. The amount varies with each drug. Ordinarily 0.1 per cent of para-aminobenzoic acid in culture mediums is sufficient for growth of organisms following sulfonamide therapy.

References:

Rose, H. M., and Fox, C. L., Jr.: A Quantitative Analysis of Sulfonamide Bacteriostasis, *Science* **95**: 412 (April 17) 1942.
Wood, W. Barry, Jr.: Studies on the Antibacterial Action of the Sulfonamide Drugs, *J. Exper. Med.* **75**: 369 (April) 1942.

HOME CANNING AND BOTULISM

To the Editor:—Is an increase in home canning of foodstuffs likely to be followed by outbreaks of botulism, and is the likelihood great enough to make this a significant public health problem if rationing of commercially processed foods makes the increase a great one? A brief review of one popular new cookbook and of a few titles in the *Index Medicus* revealed the following: The cookbook stated that the processing of acid fruits and vegetables (tomatoes and peaches, for example) in a boiling water bath was satisfactory, but that nonacid vegetables (corn, beets, carrots and the like) should be processed in a steam canner. The recommended procedure called for processing at 10 pounds pressure (240 F.) for periods varying from fifteen minutes to one hour, depending on the vegetable and the size jar used. The articles on botulism, which were few in recent journals in our library, revealed that botulism had been caused by imported commercially canned mushrooms processed at 240 F. for forty-five minutes (Clostridium botulinum, strain E, was recovered), by home processed okra, by home processed tomatoes, and a reference was found to an outbreak presumably caused by dried beans. Can you answer the following questions relating to this problem: What time and temperature combination for processing can be relied on to destroy the spores of the known strains of Cl. botulinum (assuming that an autoclave adjustable in these respects is to be used for processing food)? Using a pressure canner designed for home use and constructed to operate at 10 pounds pressure and 240 F., what processing time must be used to ensure reasonably destruction of all Cl. botulinum spores? By repeating the processing of jars by the boiling water method for three successive days, leaving the jars at room temperature between processing, can one be reasonably sure that all Cl. botulinum spores have been converted to the vegetative form and destroyed? Would such a procedure be practical for the processing of tomatoes? If food contaminated with Cl. botulinum is boiled for ten minutes before being eaten, will the toxin be destroyed? If such food is eaten, will remaining spores be converted into vegetative forms in the gastrointestinal tract of the host and produce toxin that will cause clinical botulism? Local newspapers have recently recommended the home drying of foodstuffs as an alternative to ordinary canning. The procedure recommended is steaming until the vegetable is soft; then oven drying at 150 F. with the oven door open, until dry. Is such a method likely to carry risk of botulism? Any help that you can give me on this matter will be much appreciated.

M.D., New York.

ANSWER.—Reasonably complete records indicate a total of fifteen outbreaks of botulism from home canned foods in 1941 and 1942, resulting in twenty-six fatalities. Because of the prevalence of improper home canning practices and the wide distribution of Cl. botulinum, increased incidence of botulism must be regarded as an active possibility with increased home canning of foods in 1943, unless considerable popular education can be rapidly achieved. There is no single time-temperature pressure processing schedule which can be applied to all home canned foods to insure freedom from botulism without affecting the edibility, quality or nutritive values of many of the foods. The work of J. R. Esty (*Am. J. Pub. Health* **13**:108 [Feb.] 1923) indicates that a heat treatment of twelve minutes at 115 C. (239 F.) is adequate to destroy the spores of Cl. botulinum in highly concentrated suspensions of such spores in neutral phosphate. This work was done on spores of the most heat resistant strains of Cl. botulinum isolated to date. However, the attainment of equivalent sterilizing conditions in home canned foods at any given processing temperature depends on the nature and p_H of the food, the type, size and shape of its container, the mode and rate of heat transfer to the slowest heating portion within the container, and quite often on the initial temperature of the food at the start of processing. Home canning process schedules in the U. S. D. A. Farmer's Bulletin No. 1762, Revised, 1942 (Superintendent of Documents, Washington, D. C., 10 cents) not only take cognizance of these factors but also are calculated to destroy the spores of anaerobic organisms capable of causing canned food spoilage, which are of higher thermal resistance than the spores of Cl. botulinum. Home canners, therefore, should strictly observe the process schedules listed in the bulletin mentioned or other reliable bulletins, and the directions and precautions in preparing the foods for canning which are described therein. Intermittent or fractional processing in boiling water while theoretically effective is definitely not recommended for practical use, especially with nonacid foods; with properly prepared and processed acid foods, such as tomatoes, such treatment is not required. References:

Tanner, F. W.: Bacteriological Problems in Home Canning Procedures, *J. Home Economics* **26**: 365, 1934; Home Canning and the Public Health, *Am. J. Pub. Health* **25**: 301 (March) 1934; Proper Processes for Home Canners, *J. Am. Dietet. A.* **11**: 18 (May) 1935.

Tanner, F. W., and Armstrong, Grace B.: Home Canning of Foods for Family Use, Univ. of Illinois College of Agriculture and Agr. Exp. Station Circular 394, revised, 1937.

Even after it has been found in home canned foods botulinum toxin is readily destroyed by boiling. It is important that the boiling temperature reach all parts of the food and for that reason it is better to start timing when boiling occurs and continue the boiling for fifteen minutes. If a properly boiled food is eaten no intoxication will follow from germination of the spores in the gastrointestinal tract. Oven drying of foods at 150 F. is safe, since pathogenic organisms are either killed or do not grow at this temperature. This method of drying does not carry a risk of botulism if the final moisture content of the dried product is 10 per cent or less and precautions are taken to prevent moisture uptake during storage.

CHEMICAL FUMES AND ALLERGY

To the Editor:—A cooker of varnishes is attacked by severe bronchial asthma, usually lasting several days, when exposed to the fumes of a cooking varnish into which phthalic and maleic acid enter as ingredients. The physical signs are those of a severe bronchial asthma. During an attack he is compelled to sit up and gasp for breath. Epinephrine injections give him partial relief for only a short time. He has given himself as many as twenty injections a day. Inhalators are of no help. He never had asthma until this particular varnish was first made by his firm four years ago, and during the time he is not exposed to these fumes he has no dyspnea. When cooking other varnishes he is not affected, and he seems not sensitive to any other substances. He is 46 years old and apparently in robust health except for the presence of a moderately barrel shaped chest and a diastolic blood pressure of 90 to 100. Fellow workers cough and become short of breath in the presence of these fumes—in not all of whom do the symptoms persist as in his case, but many men have to quit the job for this reason. Can you suggest any method or device to avoid these attacks, other than quitting his job?

Lawrence Schlenker, M.D., St. Louis.

ANSWER.—The circumstances in this particular case are similar to those which occur in many industrial plants. The symptoms are due to the fumes, which irritate all persons, allergic and nonallergic. Allergic persons seem to react more violently to fumes than do ordinary persons, and they are more apt to have the symptoms of asthma. To see if the patient belongs in the allergic group he should have complete skin tests and an estimation of the percentage of eosinophils in the blood and sputum. If positive tests are found the substances should be removed if possible, and this itself may ease some of his suffering. The patient should wear a mask while at work, and the instillation of some substance such as liquid petrolatum or zinc oxide ointment into the nostrils may be of service.

From the industrial point of view the plant itself should be equipped with a device by which the fumes would escape without exposure to the workers. This would be good business, since so many of the employees are affected and their productivity is lessened.

If the suggested measures fail to relieve symptoms, change of occupation is the only alternative, as there is no way of desensitizing to chemical fumes. A person should not continue to work in an environment which leads to prolonged suffering and to the repeated use of injections of epinephrine.

"HOOKWORM THERAPY" OF POLYCYTHEMIA VERA

To the Editor:—The *Presse médicale*, Feb. 11-14, 1942, page 156, reports a case of polycythemia vera with 8,000,000 red cells, moderate hypertension, organic mitral insufficiency, hemiplegia and pulmonary infarction. In January 1939 the patient, a woman aged 57, was treated for polycythemia by the application of 300 ancylostoma ova to the skin. Within three months the blood count was 3,500,000. Following an anthelmintic, the count rose to 7,000,000. In February 1940 200 ova were again applied, and since then the count has remained within normal limits. Furthermore, the hypertension has lowered, there is no digestive trouble and a normal diet is being followed. The author concludes that the treatment is without danger, that the dosage can be regulated by the number of ova applied, modified by diet, and that the treatment can be interrupted at will by the administration of an anthelmintic. He also concludes that it forms no public health menace, since Ancylostoma does not propagate on French soil. The questions are Would this treatment constitute a public health menace if applied in the United States? Are there any dangers to the patient that the author of the article has failed to mention? If the method is safe as far as the first two questions are concerned, where could the ova be obtained?

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ANSWER.—Infection of man with human hookworms as a therapeutic procedure is not likely to prove a public health menace in the United States, provided the number of infective stage organisms in the inoculum is limited to 200 or 300, provided only occasional patients are submitted to such treatment and provided these patients are cautioned that they must consistently use sanitary toilets. Most healthy patients can probably be inoculated with 200 to 300 infective stage organisms percutaneously without serious impairment of health, but cases are on record in which experimentally 200 organisms in the inoculum have produced loss of weight, moderate physical disability and mental apathy. In the case of an already existing disease, hookworm, like tapeworm infection, may precipitate a serious condition. Moreover, it sometimes happens that the repeated administration of anthelmintics does not remove all the hookworms. It is possible that in polycythemia vera the prognosis at times may justify unusual therapeutic procedures, but "hookworm therapy" should be regarded as strictly experimental and should be carried out with great caution. In one respect the inquirer is in error in quoting the review in the *Presse médicale*. Hookworm ova are not directly infective for man but require complete embryonation, hatching and development in favorable soil or other culture mediums and metamorphosis to the third larval stage (filariform larva) before they are infective for man on contact with the skin. Any clinical or parasitologic laboratory which has access to eggs from hookworm infected patients should be able to culture the worms to the infective stage larvae.